SEA AND INLAND

FISHERIES

REPORT FOR 1976

AN ROINN IASCAIGH AGUS FORAOISEACHTA
(Department of Fisheries and Forestry)

DUBLIN:
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REPORT

OF THE

MINISTER FOR FISHERIES AND FORESTRY

ON THE

SEA AND INLAND FISHERIES

FOR THE YEAR

1976

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PART I.

SEA FISHERIES

In 1976 the total value of sea fish landings reached another record figure of £12.9m exceeding that of 1975 by £3.7m. The biggest increase occurred in the value of landings of demersal fish. The value of such landings at £4.7m represented an increase of £1.8m or 61%. The value of shellfish landings also showed a significant increase of £1.6m or 64%. The weights and values of annual landings of seafish (excluding shellfish) since 1967 are set out in the following table:—

TABLE 1

Year	Metric tons	£'000
1976	68,800	8,880
1975	65,800	6,763
1974	75,000	6,982
1973	75,200	5,690
1972	75,700	3,900
1971	60,500	2,930
1970	67,300	2,809
1969	54,600	2,105
1968	42,500	1,669
1967	42,400	1,636

Details of quantities and values of the different varieties of seafish and shellfish landed in 1975 and 1976 are given in Appendix I. The average price per metric ton obtained for each variety of seafish (other than shellfish) from 1969 onwards is shown in Appendix 2.

The leading fishing ports of 1976 in order of value of fish landed were: Killybegs, Howth, Castletownbere, Dunmore East, Galway, Skerries, Burtonport, Greencastle, Fenit and Kilmore Quay. As compared with the corresponding order of importance in 1975, Howth maintained its position in second place. The most noticeable change was the rise of Castletownbere from 6th position in 1975 to third in 1976.

DEMERSAL FISHERY—At 23,811 metric tons the total landings of demersal fish showed an increase of 3,840 metric tons or 19%. Increases on the 1975 figures occurred in almost all categories of

demersal fish. Landings of cod increased by 1,249 metric tons or 29% while haddock increased by 305 metric tons or 30%. Despite this increase however, the haddock catch is still below the 1974 haddock catch of 2,411 metric tons. Sole and dabs also recorded increases, with sole showing the largest percentage increase of all demersal species. Whiting was the species caught in greatest quantity and was followed by cod, plaice, ray/skate and saithe in that order. The total value of the demersal fish catch increased by 61% from £2.9m to £4.7m in 1976. Cod was first in terms of cash earnings followed by whiting, plaice, sole, and ray/skate. These five varieties contributed 80% of the total value of the demersal fish catch.

Increases in average prices were achieved in most varieties. The overall average price of all demersal fish landed in 1976 was £195 per metric ton as compared with £144 per metric ton in 1975. This increase was due to the higher prices obtained for varieties such as cod, turbot and plaice.

The weights, total value and average value of landings of demersal fish over the past ten years are shown in the following table.

TABLE 2

Year	Quantity	Value	Average Value per metric ton.
	metric tons	£'000	£
1976 ...	23,800	4,652	195
1975 ...	20,000	2,881	144
1974 ...	19·500	2,527	129
1973 ...	20,400	2,374	117
1972 ...	17,100	1,568	92
1971 ...	20,700	1,590	77
1970 ...	15,300	1,428	93
1969 ...	16,000	1,254	78
1968 ...	15,900	1·112	70
1967 ...	15,900	1,080	68

PELAGIC FISHERY—The total pelagic catch of 44,982 metric tons was 876 metric tons or 2% less than the figure for 1975. The total value of the catch was £4.2m representing an increase of 9% on the 1975 figure of £3.9m.

Herrings—Landings of herrings amounted to 22,012 metric tons valued at £3.1m compared with 28,809 metric tons valued at £3.2m in 1975.

The 1975/76 winter herring fishery off the South coast which had begun at the end of August 1975 continued until the middle of February, 1976. The total landings, which were made mainly at Dunmore East and Cobh, amounted to 6,804 metric tons which was 5,414 metric tons lower than in the previous season. The value of the landed catch was £1.1m. Because of the poor fishing throughout the season a number of boats did not participate in the fishery with the

result that the total number of boats involved decreased from 104 to 78. The earlier start to the season meant that until the middle of January there were a possible 105 fishing days and landings were made on 87 of these days. Although poor weather in January again restricted fishing, generally speaking the weather throughout the whole season was above average. As in the 1974/75 season as a conservation measure and with the agreement of the fishermen no trawling for herring was permitted on Saturday or Sunday nights.

The South-West coast herring fishery which was mainly exploited by boats fishing from Castletownbere started in August and continued until November. Total landings amounted to 688 metric tons valued at £0.1m as compared with 1,281 metric tons valued at £0.17m in 1975.

The 1976/77 winter herring fishery off the South coast (Celtic Sea) began during September 1976 and continued through the year and until the middle of January 1977. The season opened earlier than usual but catches were generally very disappointing. The total landings in the period up to 31 December 1976, which were made mainly at Dunmore East and Cobh, amounted to 1,719 metric tons as compared with 5,479 metric tons in the corresponding period of 1975. Because of poor fishing in the early part of the season a number of boats did not participate in the fishery with the result that the total number of boats involved decreased from 78 to 40.

The 1975/76 winter herring fishery off the North-West coast, which had commenced in October 1975, continued until early February 1976. A total of 6,863 metric tons valued at £0.8m was landed in this period, mainly at Killybegs, a decrease of 120 metric tons and £0.1m respectively from the 1974/75 figures.

Total herring landings along the North-West coast during 1976 amounted to 10,264 metric tons, a decrease of 6% on the 1975 figure, but the value at £1.4m was £0.3m or 25% higher than in 1975. The number of boats which took part in herring fishing increased from 30 in the early part of the year to a total of 40.

The herring fishery which has developed in recent years on the West coast continued in 1976. However total landings during the year of 2,855 metric tons showed a slight decrease on the corresponding figure for 1975. Value of landings rose however by 7% to over £0.3m.

Following the pattern established in recent years relatively little curing of herring was done ashore during the main season and the majority of the catch (either whole or filleted) was exported either fresh or frozen. The amount exported direct to the Continent in luggers decreased considerably. Because of the keen market demand no difficulty was experienced in the disposal of the catch. Herrings were exported to many countries including the Federal Republic of Germany, Netherlands, France, Norway, United Kingdom, Sweden, Poland and Denmark.

Exports of fresh, chilled or frozen herrings amounted to 8,485

metric tons valued at £2,587,000 as compared with 10,755 metric tons valued at £2,444,000 in 1975. The quantity exported in salted and smoked forms was 5,291 metric tons valued at £1,533,000 as compared with 8,111 metric tons valued at £1,668,000 in 1975. A further 3,287 metric tons of herrings valued at £1,703,000 was exported in prepared or preserved form.

The following table shows the total quantity and value and average value per metric ton of herrings landed in each of the past ten years.

TABLE 3

Year	Quantity	Value	Average Value per metric ton.
	metric tons	£'000	£
1976	22,000	3,133	142
1975	28,800	3,232	112
1974	39,600	3,950	100
1973	38,900	2,802	72
1972	47,800	2,116	44
1971	31,300	1,163	37
1970	45,500	1,275	28
1969	34,700	784	23
1968	23,000	497	22
1967	23,700	499	21

Sprats—Landings of sprats increased from 3,598 metric tons in 1975 to 8,576 metric tons in 1976, an increase of 140% while the value of the catch increased from £60,000 in 1975 to £218,000 in 1976.

Mackerel—Landings of mackerel amounted to 14,394 metric tons valued at £877,000 as compared with 13,354 metric tons valued at £584,000 in 1975. The average price was £61 per metric ton as against £44 in 1975.

The chief landing places for mackerel were: Killybegs, Castletownbere, Burtonport, Valentia, Dingle, Galway and Schull. Statistics of mackerel landings over the past 10 years are given in the following table:—

TABLE 4

Year	Quantity	Value	Average Value per metric ton.
	metric tons	£'000	£
1976	14,394	877	61
1975	13,354	584	44
1974	8,525	365	43
1973	8,314	381	46
1972	4·592	147	32
1971	3,105	118	38
1970	1,051	40	38
1969	1,616	45	28
1968	2,164	49	23
1967	2,245	51	23

SHELLFISH—The value of the shellfish catch at £3,9m showed an

increase of £1.5m on the value of the 1975 catch. Landings of Dublin Bay Prawns increased from 994 metric tons in 1975 to 1,852 metric tons in 1976 with a consequent increase in value from £0.2m to £0.6m. Landings of oysters increased from 498 metric tons in 1975 valued at £0.2m. to 885 metric tons valued at £0.6m. in 1976.

The values of shellfish landings over the past ten years are given in the following table:—

TABLE 5.

Year		£'000
1976	...	3,886
1975	...	2,374
1974	...	1,754
1973	...	1,773
1972	...	1,417
1971	...	1,308
1970	...	1,102
1969	...	891
1968	...	735
1967	...	517

EXPORTS—At £23m. exports of fish and fish products, including both sea fish and freshwater fish preparations (see Part II of this Report) established a new record. Exports of sea fish and fishery products were valued at £18.5m as against £10.3m for 1975. Details of exports are given in Appendix 4.

PERSONNEL AND VESSELS—The number of fishermen engaged full-time rose from 2,274 in 1975 to 2,495 in 1976, while the number of part-time fishermen rose from 4,356 to 4,898. There was an overall increase in the number of vessels engaged in fishing in 1976, the total being 2,462 compared with 2,346 in 1975. A particularly significant increase occurred in the number of vessels over 75 gross tons in the fleet, the total being 78 compared with 59 in 1975. The number of motor fishing vessels over 25 gross tons which are responsible for most of the wetfish catch rose from 340 in 1975 to 362 in 1976 while the number of motor vessels under 25 gross tons rose from 792 in 1975 to 875 in 1976.

Further details are given in Appendix No. 7.

TRAINING OF FISHERMEN — Theoretical training under the Scheme for Training Boys as Fishermen continued during 1976 at An Scoil Iascaigh Náisiúnta (The National Fishery School), at Greencastle, Co. Donegal. As heretofore the period of training extended over twelve months, five of which were spent at a shore course pro-

vided in the school. During the remainder of the period practical fishing experience was acquired by the trainees aboard selected fishing vessels. A group of 24 boys commenced training under this Scheme on 2 February 1976 and at the end of the year 17 completed the practical side of the course. A second group of 28 boys commenced their training at the National Fishery School on 6 September 1976 and the course was still in progress at the end of the year.

In furtherance of the intention that this School be employed as the centre for which training facilities generally for the fishing industry would be provided, initial steps were taken to implement this intent by the arrangement of an evening course on diesel engine maintenance at the school for fishermen in the North Donegal area but this Scheme had to be abandoned due to lack of support.

During the year the curriculum of the school was enlarged to include a basic course in radar in order to introduce trainees to this subject. Following the installation of the necessary equipment instruction was provided for trainees in radio communication and radio telephony and in a subsequent examination 9 students were granted a certificate.

Since this Scheme for Training Boys as Fishermen was revised in 1968, 538 candidates have completed the course. Two shore courses to equip experienced fishermen to qualify as skippers were also held in the National Fishery School during the year. Nine fishermen availed of the courses and were subsequently successful in obtaining Certificates of Competency under the Merchant Shipping Act. Since its inception in 1958 this Scheme has assisted 134 fishermen in obtaining certificates.

An Board Iascaigh Mhara continued in 1976 to provide Port Courses at selected centres for fishermen who were not in a position to spare the time to attend the National Fishery School and as a result Certificates of Competency under the Merchant Shipping Act were awarded to a further 4 fishermen.

AN BORD IASCAIGH MHARA—The Board received from the Fisheries Vote for the year ending 31 December 1976 a grant of £4,175,000 in aid of administration and current and capital development. Repayable advances totalling £2,000,000 were also made to the Board from the Central Fund mainly for the provision of boats and gear.

During the year State aids for the purchase of fishing boats were reviewed. The main effect of the review was that the subsidised interest rate on boat loans was increased from 4% to 8%.

The Board assisted Irish fishermen in acquiring 56 new vessels during the year of which all but two were home built.

The Board's Annual Report on its activities during 1976 is published separately.

SEA FISHERIES PROTECTION—Protection of the exclusive fishery limits involving regular patrols by vessels of the Naval Service of the Department of Defence was maintained in 1976. Prosecutions were instituted against the skippers of eleven foreign vessels who had been arrested for illegally entering and fishing inside our exclusive fishery limits. Convictions were secured in all cases of which five were under appeal at the close of the year. In the conduct of these cases and in the enforcement of fishery protection measures generally, the co-operation of the Garda Siochana was readily available.

MARINE WORKS—At Killybegs Fishery Harbour Centre construction work on the new landing pier and servicing quay and the extension to the Blackrock Pier were virtually completed at the end of the year. A boring survey was carried out at the new site for the proposed syncrolift.

It was necessary to revise the design of the proposed syncrolift at Killybegs to provide for the larger sized vessels expected to join the fleet in future years. It also became necessary to revise the design of the proposed auction hall in the light of the increase in landings which has taken place in recent years.

Expenditure on the development works at Killybegs during the year was £153,503. A Harbour Master was appointed in July 1976.

At Castletownbere Fishery Harbour Centre work on the construction of the wharf and the syncrolift on Dinish Island reached an advanced stage. A lay-out plan for industrial sites on the Island was prepared. Work on site development was put in hand and good progress was made in the sector designated for fish based industries. Several tentative inquiries for sites on this estate were received, and are being considered.

A consultant was appointed to design a full effluent treatment and disposal system to deal with effluents arising from industries based on the Island. Most of the preliminary site investigation work for this Scheme was completed. Arrangements for the provision of other services including water and electricity supplies were well advanced. A site for an automatic telephone exchange to serve Castletownbere and adjoining rural area has been set aside on the Island.

At Dunmore East sites for a sewerage pumping and treatment works were assigned to Waterford County Council. Negotiations to lease further sites for works related to the fishing industry were in hand.

At Rossaveal, Co. Galway, construction work for a new pier and causeway had reached the final stage by the end of the year. This work, which is being financed by Roinn na Gaeltachta, will cost over £1 million.

Other fishery harbour improvement works, for which State grants were made by the Department of Agriculture and Fisheries and which

were completed in 1976 were carried out at Moville, Co. Donegal; Seafield, Co. Clare; Knightstown, Co. Kerry; Killala, Co. Mayo (dredging); and Mullaghmore, Co. Sligo. A boring survey was completed at Schull, Co. Cork in December 1976. Improvement works which were recommended by this Department and financed by Roinn na Gaeltachta were completed at Ballywhooriskey and Inishmaan, Co. Donegal; Glengad, Co. Mayo; Mace, Co. Galway; and Reen, Dunquin, and Dingle (lights and repairs to the pier), Co. Kerry. Fishery harbour works subsidised by State grants given by the Department of Agriculture and Fisheries which were in progress at the end of the year were at Ballyglass, Co. Mayo and Enniscrone, Co. Sligo. Improvement works which were recommended by this Department and financed by Roinn na Gaeltachta were in progress at the end of the year at Burtonport (navigational aids), Stacamore, Leabgarrow, and Magheraoarty, Co. Donegal and Killeaney, Co. Galway.

EUROPEAN ECONOMIC COMMUNITY

Common Fisheries Policy.—After the failure of the September session of the United Nations Law of the Sea Conference to agree on the question of exclusive economic zones, the EEC Commission proposed to the Council on 23 September that member States jointly extend their fishing limits to create a 200 mile Community fishing zone in the North Atlantic and North Sea from 1 January 1977. At the same time the Commission proposed the elements of a new fisheries regime to apply within the extended Community Zone. The latter proposals which largely relied on quotas were rejected by the Minister for Foreign Affairs, Dr. G. Fitzgerald, TD, as being unacceptable to the Irish Government. He said that they did not take adequate account of the interests of coastal fishermen in under-developed regions and that the proposals regarding coastal bands were inadequate to meet the needs of these fishermen whose livelihood was being threatened by gross overfishing by vessels from other countries.

The Commission's proposals were further discussed at a special meeting of Community Foreign Ministers in the Hague on 30 October. At this meeting, it was agreed that the revised Common Fisheries Policy would be so applied "as to secure the continued and progressive development of the Irish fishing industry on the basis of the Irish Government's Fisheries Development Programme for the development of coastal fisheries". The Council of Ministers also agreed to the joint extension by member States of their exclusive fishing limits to 200 miles from 1 January 1977 and authorised the Commission to negotiate framework agreements with interested third countries on mutual access arrangements. At the same time a unilateral statement was made by Ireland and entered in the minutes to the effect that in the view of the Irish Government the continued and progressive development of the Irish fishing industry can be secured only by the establishment of an exclusive coastal belt of up to 50 miles and that they consider agreement on the coastal belt issue to be a precondition to the adoption of new directives by the Council for substantive agree-

ments with third countries on the reciprocal fishing rights which would be designed to follow on the conclusion of framework agreements and of such interim arrangements as may be required before substantive agreements on quotas and zones can be put into effect.

Despite further discussions at Council level, no agreement was reached by the end of the year on a permanent Community regime.

Common Organisation of the Market—Customs duties on exports of Irish fish and fish products to other member States of the Community were again reduced from 1 January 1976 to 20% of the rates which applied before our entry into the EEC, under the Accession Treaty arrangements. This reduction helped to stimulate further our exports of fish and fish products, particularly in the processed fish sector. The second last stage in the alignment of Ireland's duties to the Common Customs Tariff (CCT) on imports from non-EEC countries also came into effect on that date which meant that 80% of the difference between our duties and the CCT had been eliminated.

Market intervention came into effect with the operation of the EEC withdrawal price system by the Irish Fish Producers' Organisation Ltd. from 2 February 1976. As a result, there was a marked increase in prices over the 1975 levels for the main varieties of interest to Irish fishermen and prices were considerably stabilised. The guide and withdrawal prices for the 1977 fishing season were fixed by Council Regulations 3120/76 and 3128/76 of 16 December 1976.

Under the FEOGA Individual Projects Scheme, Irish fishery projects comprising the construction of 18 new fishing vessels, two processing projects and 1 oyster farming project were approved by the EEC Commission for aid totalling £1,314,149.

Further discussions took place at Council Working Group level on the Commission's proposals for the restructuring of the inshore fishing industry and the draft regulation on conditions for granting national aids under the common structural policy for sea fishing but neither of these matters was agreed upon by the end of the year.

RESEARCH AND DEVELOPMENT—During the year six Fishery Leaflets were published, the details of which are given on page 74. The R and D work of the marine staff concerns itself with pelagic fish (species living above the sea bed for most of their lives), demersal fish (fish living mainly on or near the sea bed), shellfish, and studies of the environment, including pollution.

1. *Pelagic Species*

Investigations into the herring stocks along the Irish coasts were continued during 1976 and the results and the prospects were circulated to the trade in the various Fishery Leaflets. Regular

estimations of the fat content of herring and the number of herring per kilogramme were made and this information also distributed to the trade. Young herring landed for reduction to fish meal at Mornington were also examined throughout most of the year to determine the races to which they would eventually recruit. A young herring survey, on a limited scale, took place in the Irish Sea in the summer of 1976 in an attempt to forecast recruitment to the Celtic Sea fishery. With the help of a student, samples of young herring from Donegal Bay were examined in the summer of 1976 in an effort to determine to which stock they belong. Most of these young herring would seem to belong to the main autumn spawning population.

One of the Department's officers took part in a Scottish tagging trip on board the *R.F.V. Clupea* in an attempt to tag herring off the west coast of Scotland. This experiment is part of a proposed tagging programme to determine whether any mixture takes place between the herrings from the west coast of Scotland and those from the Donegal and Mayo coasts.

Investigations were continued during 1976 on the sprat stock along the east coast which is exploited by the fishmeal factory and in this connection species composition of the industrial catches were also recorded. Towards the end of 1976 a new fishery for sprats developed off the coasts of Cork and Waterford and samples from these catches were also analysed. It will be possible to estimate the size of this stock and subsequently to determine the optimum yearly catch. It is hoped that this fishery will provide a valuable alternative to the Celtic Sea fishery which has declined dramatically in the last few years.

2. *Demersal Species*

(a) *Cod*

A quarterly commercial catch sampling programme was initiated with around 2,000 cod examined at Howth and Killybegs, 1,400 at Kilmore Quay/Dunmore East and around 500 each at Castletownbere, Galway and Greencastle. As predicted in the 1975 Report, the 1973 year-class proved to be fairly strong in the Donegal area and the 1974 year-class appears to be considerably stronger, so a slight increase in cod landings in the near future appears probable. This increase was already apparent at Greencastle where codling appear to form the bulk of the catch, and to some extent at Burtonport, but it has not yet been evident at Killybegs, where the age composition of the landings is generally older. The yield from these year-classes can be maximised if they are not too heavily exploited as young fish. In the Irish Sea, the catch was found to have become heavily dependent on age-group 1 and 2 fish (codling), catches of larger cod having markedly decreased. Good survival of these age-groups is necessary for the catch of older, heavier fish to rise in the immediate future. Samples from other areas have been analysed in less detail.

(b) *Haddock*

During the year, almost 3,000 haddock were examined at Killybegs and around 500 at Castletownbere, Galway and Greencastle. As suggested in the 1975 Report, the 1974 year-class has proved to be better than average in the north-west. Its strength is nowhere near that of the uniquely abundant 1967 year-class which boosted catches greatly between 1969 and 1974, but its influence did increase the 1976 catch considerably on its 1975 level. Elsewhere the trends are less apparent.

(c) *Whiting*

Over 3,500 whiting were examined at Howth, with about 2,000 each at Killybegs and Castletownbere and 500 at Galway. The age-group 2 fish (1974) year-class were found to be unusually numerous, which suggests that the catches off Donegal which were up on the 1975 levels could show a further slight rise in 1977. In the Irish Sea however, where the catch also increased, survival of age-group 2 fish for a further year is normally much poorer, so such a rise there is rather unlikely and the 1977 catch must depend more on the as yet imperfectly known 1975 year-class strength. Whilst it is not possible to be precise, the smaller fisheries off Munster and in Galway Bay appeared to be in a state of decline during the year.

(d) *Sole*

The only reasonably concentrated fishery for this species occurs in the south-west. About 900 sole were examined at Castletownbere, but processing of the data has not yet been completed for this rather difficult species.

3. *Shellfish*

3.1 *Crustacea*

(a) *Dublin Bay prawn (Nephrops norvegicus)*

Small-scale sampling was undertaken at Skerries and two cruises were carried out, in June and August respectively, to investigate escapement from trawls of different mesh size.

It is very difficult to determine the age of a prawn, although this information is essential for proper investigations of the stock to be made. As part of the research programme on this species, new methods of age determination using bio-metrics were introduced with some success.

(b) *Lobsters*

Research work with this valuable species was continued in 1976, with the help of an undergraduate student from Trinity College, Dublin. Lobsters from various ports along the south coast were examined during the summer fishing season at Kilmore Quay, Co. Wexford.

3.2 *Molluscs*

(a) *Oysters*

The research work carried out over a decade at Tralee Bay and concerned with the natural oyster resource in that place having been brought to a successful conclusion in 1975, the Department continued to take the initiative in advising on principles for the proper management of this oyster stock. In addition, advice and assistance was given in connection with various other public and private oyster holdings along the coast.

(b) *Mussels*

Research and technological work with this species was continued. A member of the scientific staff acted as Adviser in connection with the cultivation of mussels from rafts.

(c) *Escallops*

The highly successful escallop farming experiments carried out at Lough Hyne, Co. Cork, and reported in the 1975 Annual Report for the first time, were continued in 1976. This work represents the first fully successful spawning of escallops and their subsequent settlement under controlled conditions, in European waters. To mark the success of this work, the first European Workshop on Escallop farming was held at Lough Hyne in May 1976 and it was attended by scientists from many countries and from both sides of the Atlantic.

4. *Marine Pollution* (see also under Engineering—page 34).

The work of the Aquatic Environment Unit (see Annual Report 1975) got under way in 1976 with a programme aimed mainly at estuarine pollution, at industrial discharges and at participating in the work of the ICES Working Group on Marine Pollution.

(a) *Long-term environmental and fish quality monitoring*

Heavy metals levels were analysed in fish and shellfish from ports of landing around the coast as part of Ireland's contribution to the ICES Baseline Study of Pollution in the Oslo Commission and ICNAF areas (N.E. and N.W. Atlantic) as well as our national monitoring needs. Heavy metals levels were also analysed in sediment, seaweed, and shellfish from three locations on the south coast (Waterford Harbour, Dungarvan Bay, and Kinsale), and seaweed samples from 10 other stations, mainly on the west and south coasts, were also analysed. Particular emphasis was placed on analyses of shellfish, especially mussels and oysters. Mussels were also collected from offshore buoys, by courtesy of the Commissioners for Irish Lights, while oysters were sampled from each of the main beds around the Irish coast. It is hoped that the data gathered will be of value not only for pollution monitoring, but also for exporters and those involved in mariculture.

(b) *Discharges*

The area off Cork, latitude 51° 34′ to 51° 37′ north and longtitude 7° 52′ to 8° 13′ west in which licensed dumping is permitted, was

surveyed; water and sediment samples for heavy metal analyses and sediment samples for faunal analyses were taken at seven stations.

The R. Deel estuary at Askeaton was examined for algal growth and the dumping of organic waste from plants in the Shannon was monitored.

A chemical survey of the R. Suir at Thurles was carried out following fish kills in the area.

Toxicity tests were carried out on effluents or pure components of effluents from five factories.

A baseline littoral and benthic survey of Killala Bay was carried out prior to proposed industrial discharges.

Eleven proposals for industrial discharges to estuarine and coastal waters were examined and recommendations were made on licensing conditions. Most proposals were for the Shannon and Cork areas.

(c) *Short-term projects and events*

A trial faunal survey of Waterford Harbour from the town to Hook Head was carried out using an anchor dredge designed by the Unit.

A 'Red Tide' (in this case, a bloom of the dinoflagellate *Gyrodinium aureolum*) was responsible for mortalities of lugworms at several places on the south coast and for a fish kill at Youghal. A separate report on this event by personnel from the A.E.U. and University College, Galway will be published in the Fisheries Investigations series.

No oil spills were reported in 1976.

5. *Fishery Research Stations*

Construction of a new temporary Research Laboratory at Abbotstown, Co. Dublin was undertaken during the year. The building is expected to be ready for occupation in 1977. It will replace the existing accommodation in Cathal Brugha Street, Dublin which is unsatisfactory. Work is in progress on the erection of a new Research Station at Castletownbere and proposals for the provision of Research Stations at Kinsale, Co. Cork and Ballyglass, Co. Mayo were being examined.

ENGINEERING

Fishing Ports and Landing Places—The arrangement made in previous years to survey the existing landing facilities in various counties to make recommendations for works required to meet the present and expected needs of the fishing industry was continued. The Survey Team appointed to report and make recommendations for the fishing port and landing places in Co. Wicklow completed their work and

presented their report to Mr. Michael Pat Murphy, Parliamentary Secretary to the Minister for Agriculture and Fisheries. The Team acted under the Chairmanship of Mr. S. O'Meallain, Consultant to the Department, and comprised representatives of the Department of Agriculture and Fisheries, the Office of Public Works, Wicklow County Council, Bord Failte, and An Bord Iascaigh Mhara.

A Survey Team was appointed also to report on and make recommendations for the fishing ports and landing places in Co. Dublin. This work commenced in July and was well advanced by the end of 1976.

Work continued on the implementation of the recommendations made in previous years for various counties by the Survey Teams appointed for these particular counties. These recommendations were reviewed and suitable adjustments made where necessary to take account of developments in the fishing activities at the various ports and landing places for which recommendations had been made.

Discussions continued with the representatives of the Louth County Council and their consulting engineers about possible repairs and improvements to the landing facilities at Port Oriel, Clogherhead, Co. Louth.

Marine Pollution—The water quality monitoring survey of Cork Harbour was continued during the year. Surveys were carried out at critical periods during the neap tides and spring tides and the Autumn.

Water Quality Surveys were also carried out at six monthly intervals at Killybegs and Castletownbere Harbours to monitor the quality of the water. Samples were taken from six points in each Harbour and submitted to the State Laboratory for analysis. The object is to provide an early warning of any marked deterioration in water quality so as to provide ample time for remedial action.

On this occasion a marked deterioration in the quality of the water in Killybegs Harbour was discovered during the check survey in October. The matter was investigated and it was discovered that the whole Harbour area was heavily contaminated with a thick heavy white grease. The probable source was identified and representations made to have the matter attended to. The condition was found to be transitory.

There were continuous discussions with the sponsors of major projects from which large quantities of effluent will be discharged into our principal estuaries to ensure that all practical steps will be taken to protect the fishery interests. The effects of the discharge of effluents for which Section 171 licences have been issued were monitored.

Various EEC Directives or proposed Directives were examined in

detail and commented on or appropriate arrangements made where necessary.

Continental Shelf Exploration and Exploitation—Sponsors of seismic investigations continued to keep the Department informed of their proposals and these have been examined and considered for likely implications for the fishery interest.

The Inter-Departmental Working Group set up by the Minister for Industry and Commerce to co-ordinate the actions of various Departments in relation to Kinsale Head Gas Field Project with a view to expediting its implementation and ensuring that the requirements of the various Government Agencies are properly provided for in the design, execution and operation of the scheme continues to deal with these matters. The Inspector and Engineer continued to act as Departmental representatives on this Working Group.

A special meeting was organised in Cork by this Department at which representatives of the principal Fishery Organisations as well as representatives of the firm of Marathon attended to provide an opportunity to learn and discuss the nature of the work involved in the development of this Gas Field and to explore what impact if any it would have on the fishery interests.

TECHNOLOGY

Fish Quality Regulations—The Fish Quality Officers continued to supervise fish landings to ensure compliance with the Demersal Fish (Handling, Storage and Transport) Regulations, 1967, as amended by the Demersal Fish (Handling, Storage and Transport) Regulations 1973. Particular attention was paid to the size of freshness gradings of fish landed at Irish ports to ensure compliance with EEC Council Regulation No. 103/76 of January 1976. They were active in certifying that fish withdrawn from the market for which the Producers Organisation wished to claim compensation had been properly graded and properly disposed of.

Fishery Products—Processing—During the year a number of proposals for the development of existing fish processing plants and the initiation of new Schemes that have as their object adding to the value of existing products by the carrying out of further processing in Ireland were investigated and the sponsors advised and the grant worthiness of the project commented on.

A number of proposals setting up fully integrated processing plants were examined and the viability of the projects evaluated.

Fishery Products—Export Control—The Control of the export of certain fishery products under licence in compliance with the Order made in November 1971 by the Parliamentary Secretary to the Minister for Agriculture and Fisheries under the Agriculture and Fishery

Products (Regulation of Export) Act, 1947, operated satisfactorily during the year in respect of those products for which the Institute for Industrial Research and Standards had formulated standard specifications. Export licences were granted for those products for which applicants were licensed by the Institute to use its Standard Mark.

With the introduction of special Regulations governing the import of fishery products into the Republic of France special arrangements were made for supervision of those premises and processors involved in the export of fishery products to France and suitable certificates were issued in respect of products exported.

In one incident a temporary ban on exports had to be enforced pending a review of the processing arrangements.

National Codex Alimentarius Committee—The Sub-Committee of Fish and Fishery Products continued to advise the National Codex Committee on Codex matters of importance to Ireland arising in the formulation of International Codex Standards for Fish and Fishery Products. The Sub-Committee under the Chairmanship of the Inspector and Engineer consisted of representatives of the Department of Agriculture and Fisheries, the Institute for Industrial Research and Standards, An Bord Iascaigh Mhara, The State Laboratory and the Confederation of Irish Industries.

Bye-Laws, Licences, Definitions—Maps were prepared in connection with various Bye-laws, Orders and other Licences.

INTERNATIONAL AND OTHER CONFERENCES

During the year Sea Fisheries Division was represented at the following conferences, study groups, etc.:

Abroad:

(1) United Nations Third Conference on the Law of the Sea at New York.

(2) International Council for the Exploration of the Sea, at Copenhagen.

(3) Codex Alimentarius Committee on Fish and Fishery Products, at Bergen.

(4) Challenger Society meeting on Estuarine and Coastal Studies, at Southampton.

(5) Estuarine and Brackish Water Science Association meeting on 'Coastal Lagoons', at the Isle of Man.

(6) Third Meeting of Technical Working Group (of the Interim Paris Commission), at the Hague.

(7) Fourth Meeting of Standing Advisory Committee for Scientific Advice (of the Oslo Commission), at Nantes.

Home:

(1) Third Meeting of Oslo Commission (Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft), *at Dublin.*

(2) Third Meeting of Interim Paris Commission (Convention for the Prevention of Marine Pollution from Land-based Sources), *at Dublin.*

(3) Seventh Annual Meeting of the West European Fish Technologists' Association, *at Dublin.*

(4) National Committee for Geodesy and Geophysics.

(5) National Science Council Environmental Pollution Panel.

(6) National Science Council Marine Science Committee.

(7) Inter-Departmental Environmental Committee.

(8) Ad-hoc Liaison Group with Department of Local Government on Technical Aspects of EEC Legislation on the Control of Water Pollution.

(9) IIRS Conference on 'Monitoring Industrial Pollution'.

(10) Escallop Workshop, Lough Hyne, County Cork.

(11) Eleventh European Marine Biology Conference, at Galway.

LEGISLATION

Particulars of the Statutory Instruments relating to Sea Fisheries made during the year are included in Appendix No. 22.

PART II.

INLAND FISHERIES

Details of the catches of salmon, sea trout and eels in the various Fishery Districts during 1976 are given in Appendices Nos. 11 to 17 to this Report. As usual, the catches made in the Foyle Fisheries Commission area, formerly the Moville Fishery District, are not included but they are referred to in a separate section of this Report.

In 1976 the catch of salmon and grilse amounted to 467,231 fish weighing 1,491.82 metric tons and valued at £5,301,737, compared with 681,797 fish weighing 2,188 metric tons and valued at £3,013,531, for 1975. The overall average weight at 3.20 kgs was slightly lower than in 1975. The commercial catch at 1,448.85 metric tons was also lower than the 1975 figure of 2,136 metric tons. The total rod catch amounted to 12,520 fish weighing 43.02 metric tons valued at £151,884 compared with the figures for 1975 when 15,332 fish weighing 52.16 metric tons and valued at £71,395 were caught. The total number of licences of all kinds for angling for salmon and sea trout was 14,412 compared with 13,286 in 1975. The salmon catch figures for nets and rods for the years 1974, 1975 and 1976 are given in Appendix No. 12. In 1976 the salmon and grilse catch (by weight) was distributed as follows:—

Drift nets	...	70%
Draft nets	...	20%
Stake nets, snap nets, weirs and other commercial methods	...	7%
Rod and Line	...	3%

The average weight and value of salmon caught by commercial fishing engines during the past four years are given in Appendix No. 11A. The catch in 1976 was approximately 70% of the 1975 total and was the lowest recorded catch since 1968. The decline in catch could, in part, be attributed to the poor survival of smolts in the sea. There were very few returns both from smolts tagged in home waters and from U.K. tagged smolts caught in Irish waters. However, the high rate of catches during the period 1972 to 1974 must have reduced the total salmon biomass very substantially.

Details of the catch of sea trout in 1976 in the various Fishery Districts are given in Appendix No. 13. The total catch amounted to 53,352 metric tons valued at £92,938. Very little commercial fishing specifically for sea trout is undertaken in this country and over 50% of the total catch is taken as a by-catch of commercial fishing for salmon. It is difficult therefore to compile accurate statistics. The catch of sea trout, as returned, was distributed by weight as follows:

Rod and Line	...	38.6%
Draft, Drift Nets and other commercial engines	...	61.4%

The Dublin Wholesale Fish Market handled 127,435 salmon and grilse weighing 403,994 kgs in 1976 compared with 151,595 fish weighing 450,115 kgs in 1975. This market handled in 1976 about 25% of all the fish taken in the country, outside the Foyle area.

BOARDS OF CONSERVATORS—Details of receipts and expenditure of Boards of Conservators for the fishery year ended 30 September 1976 are given in Appendix No. 18.

RE-ORGANISATION OF INLAND FISHERIES—The Report of the Inland Fisheries Commission which was published in August 1975 was fully examined in the Department during 1976. Comments from all sections of the community were considered, together with the recommendations in the report, in formulating a memorandum for Government. A draft memorandum was submitted to various Government Departments in July 1976 and by the end of the year the preparation of a memorandum for submission to Government was well advanced.

REGULATION OF SALMON NET FISHING—A new conservation measure was introduced in 1976 limiting the maximum depth of drift nets to 30 meshes. Following representations from the fishermen, the commencement date of the new bye-law was deferred to January 1977 in order to give the fishermen an opportunity to adjust their nets.

A bye-law was introduced in April 1976 requiring net fishermen to display their fishing licence number on their nets and boats. The purpose of this bye-law was to help protection staff in detecting and apprehending persons illegally fishing.

EMPLOYMENT IN THE INDUSTRY—Exclusive of persons employed on the marketing and transport of fish, a total of some 6,500 persons found either whole-time or part-time employment in inland fisheries during the year. This figure includes 4,550 persons estimated as engaged in netting for salmon, 300 employed by Boards of Conservators on protection of fisheries, 800 engaged in netting and protection work in the Foyle area, 155 engaged in development work on behalf of Inland Fisheries Trust Inc. and the remainder employed by proprietors of commercial and sport salmon fisheries or by angling associations.

INSTRUMENTS OF CAPTURE—The total number of fishing licences of all kinds issued during the year was 16,997. Totals since 1971 were:—

1975	...	15,565
1974	...	15,253
1973	...	14,212
1972	...	12,134
1971	...	12,975

The numbers of the various types of licences issued in each fishery district during the year and the rates of licence duty are given in Appendices Nos. 19 and 20.

EXPORTS OF FRESHWATER FISH—Salmon:—The total quantity of salmon exported in fresh, chilled, frozen and smoked forms was 1,195 metric tons compared with 1,631 metric tons in 1975. Total value of these exports rose from £3,119,500 in 1975 to £4,535,500.

Details for the two years are as follows:

	1975		1976	
	metric tons	£'000	metric tons	£'000
Fresh, chilled, frozen salmon ...	1,564	2,865	1,138	4,266
Smoked salmon ...	67	254	57	354

Of the total quantity of fresh, chilled and frozen salmon exported in 1976, 764 metric tons went to Great Britain, 121 metric tons went to France, 119 metric tons to the Six Counties, 52 metric tons to Spain, 27 metric tons to the Netherlands, 26 metric tons to Belgium/Luxembourg and 17 metric tons to Germany.

The smoked salmon was exported mainly to U.S.A. (12 metric tons), to Federal Republic of Germany (12 metric tons), Belgium/Luxembourg (10 metric tons), and France (5 metric tons).

The average export price of fresh, chilled or frozen salmon was £3,749 per metric ton as compared with £1,831 per metric ton in 1975.

Rainbow Trout.—Exports of rainbow trout in 1976 amounted to 113 metric tons valued at £162,000 as compared with 169 metric tons valued at £143,000 in 1975.

Eels.—Export of eels in 1976 amounted to 87 metric tons valued at £123,000 as compared with 89 metric tons valued at £104,000 in 1975.

EEL FISHING DEVELOPMENT—As indicated in the paragraphs dealing with scientific and engineering research, work continued during the year on the investigation of eel stocks and eel fishing techniques. Advice and information on eel fishing was given to interested persons. Twenty-four eel fishery authorisations were issued during the year bringing the number of fishing engines operating under such authorisations to 46.

ARTIFICIAL PROPAGATION—Details of salmon, sea trout and brown trout ova produced at the various hatcheries are given in Appendix No. 23.

The total output of salmon ova in the 1975/76 spawning season was 4,122,000. 40,000 ova were distributed from the Department's hatchery at Glenties, Co. Donegal. 200,000 salmon ova were imported from the Bush Hatchery, Co. Antrim by the Waterford Board of Conservators.

Almost two million brown trout ova were handled at Inland Fisheries Trust Hatcheries and production for the year was 1,453,735 fish consisting of ova, fry, summerlings, fingerlings, spring yearlings, autumn yearlings and adult trout. 698,760 of this stock were released into trout waters being developed by the Trust and 410,301 were sold to angling clubs and other fishing interests.

300,000 rainbow trout ova were handled by the Inland Fisheries Trust Hatcheries and production for the year was 244,357 consisting of fry, fingerlings, yearlings and adults. Of these 25,293 were stocked in Trust rainbow trout waters and 188,270 were sold.

RESEARCH AND DEVELOPMENT

Salmon—The scientific research and development studies carried out by the Department during 1976 in respect of salmon, came under the following categories:—

Catch statistics and salmon runs.
Stock abundance and composition.
Migrations of juvenile and adult salmon.
Egg and smolt production.
Salmon farming and disease studies.
Environmental studies.

Investigations are continuing into the fluctuations in time of running and age composition of the salmon stocks. As in previous years scale examination showed that the bulk of our fish are grilse (1+ sea winter fish) derived from 2-year old smolts. Spring fish which were an important component of our stock up to the late fifties showed a further decline in 1976. This early component of our stock forms the bulk of the anglers' catch and its decline is to some extent responsible for the reduced catch by anglers.

The bulk of the fish approached the North, West and South coasts between June 11 and 20 and by July 20 the coastal net catch for salmon had almost ceased. On the south east and east coast extending from Hook Head, Co. Wexford to Carlingford Lough, Co. Louth there was evidence that the runs were much later. In the River Slaney there were two peaks, one in April and the other in mid-July. In the Dublin district a total of 548 salmon were taken by commercial engines and of these 11.8% were taken after July 20. In Dundalk Bay over 30% of the catch was taken after July 20.

The 10-day catch data suggests that the salmon approach the coast at virtually the same time from the north west to the south west.

The east coast receives salmon both from the north east and the south coast as indicated by data from the various tagging programmes and this could account for the lateness of the run into east coast rivers.

Sex ratio and Fecundity—Work has continued on the sex ratio of the grilse run. The sex of fish sampled in June and July 1976 showed that the majority of fish were females. It is hoped that these investigations will be extended to the early run fish next season. Indications are that there are more males than females in the early run fish.

Investigations into the fecundity of salmon in various river systems was started in the autumn of 1976. The volumetric method for estimating egg deposition was used and this was checked with actual egg counts for a random sample of fish. Very little data is available on egg deposition in the country as a whole, but this information is essential for the management of salmon stocks. Results to date indicate there is a marked variation in the size (3,815 to 8,660 eggs per litre) and number of eggs in the various river systems under examination. This variation in the ability of one river to produce large numbers of small eggs, could have very considerable management significance.

Salmon migrations—The adult salmon tagging programme in 1976 was confined to the Killala Bay area. The purpose of the tagging was to obtain information on the migratory destination of salmon within and around Killala Bay. The effluent from a synthetic fibre plant is to be discharged into this Bay and it is therefore necessary to have baseline data in the area to assess the effect of acrylonitride on salmon entering the bay. Tagging was carried out within and to the east and west of Killala Bay. In general fish tagged to the west of the bay appeared to be in transit and were recovered at greater distances from the tagging stations than those tagged to the east of it. The recapture points ranged from the Cashen River in Kerry to the Solway Firth on the west coast of Scotland. Despite the wide range of recovery points, 47.8% of recaptures were in the River Moy itself. Local migration in Killala, Sligo and Donegal Bays accounted for 87.0% of the total recaptures.

Salmon smolts which had been reared under hatchery conditions in the Rivers Lee and Shannon were tagged and released in 1975 at the stage when they were ready to migrate to sea. Recaptures of these tagged smolts as grilse in 1976 showed that for every 1,000 smolts liberated into the River Lee, almost 5 returned as grilse, and in the case of the Shannon, a little more than one smolt per 1,000 liberated returned as grilse. A similar experiment in the River Boyne in 1975, but using wild rather than hatchery smolts, showed that the return was almost 4 adult salmon for every 1,000 tagged smolts released. Further recaptures as adult salmon can be expected from these taggings, but clearly at a declining rate, since grilse are more numerous than spring or summer salmon.

The rate of recapture per 1,000 smolts liberated in the case of the Lee as hatchery stock and in the case of the Boyne as wild stock

was similar. Both results illustrate the magnitude of the smolt run which is necessary to sustain a commercially viable run of salmon. For example, on the basis of 4 adults returning from 1,000 smolts, it would be necessary to have a run of 2½ million smolts to produce a run of 10,000 salmon. However, a great deal more research is required before it will be possible to make precise predictions of the yield per recruit in salmon fisheries.

The majority of adults from the smolt tagging in the River Lee were taken along the south coast but there were also returns from Burtonport and North Mayo and one from the West Greenland Fishery. There was also one return from West Greenland from the smolts tagged in Parteen on the River Shannon. The remainder were local except for one taken along the North Mayo Coast. Returns to date from the wild smolts tagged in the River Boyne were localised.

From 1973 to 1975 there were substantial numbers of UK tagged smolts recaptured as adults along the Irish coast. In 1976, however, there was a paucity of salmon tagged as smolts in the UK around our coast and only 4 were recaptured as adults; three of these being from the River Usk and one from the Almond River in Perthshire. In 1976 there was also a recapture of a fish tagged as a smolt in the River Lagan in Sweden which was recaptured along the North Mayo coast. Another salmon, also tagged as a smolt, on the Gave-d'Oloron, S.W. France was recaptured along the Donegal coast.

A total of 364 female kelts were tagged during the 1975/76 spawning season. There was only one return, and that was from a fish tagged at the ESB hatchery in Parteen on the River Shannon. It was recaptured in the River Shannon in June 1976. The paucity of returns from the kelt tagging is attributed to a high incidence of disease amongst the spawning fish, which must therefore have suffered a high rate of mortality on their way to the sea.

Mesh marks in Salmon—Reports have been received of the high incidence of escape of salmon from the coastal drift nets. In 1976 an investigation was carried out in the Moy Estuary on the presence of mesh marks in the salmon taken in the estuarine draft nets. In all 1,709 salmon were examined for the period from 5-14 July, 1976. The percentage of mesh marked fish was in fact found to be low at 4.6%. The period under investigation did not, however, cover the period of high intensity of drift netting which occurred between June 10-30, so that these experiments must be repeated.

UDN disease in Salmon—There was evidence that UDN disease in salmon showed a decline in 1976. The total number of diseased fish removed was 2,914, representing 1.07% of the total catch in the estuaries and freshwater of the infected rivers.

Disease has been recorded from most rivers in the country over the ten-year period 1966 to 1975 and was still present in all systems in 1976 with the exception of rivers flowing into Dundalk Bay. UDN

disease has not so far been recorded in north west Donegal rivers—Ray, Bavin, Lackagh and Lennon. The most affected river in 1976 was the River Moy where 709 diseased fish were recorded mostly during the spawning season. The incidence of disease in the Lee and Bandon was also high, affecting both the spring run and the spawning run. Therefore unless there is a resurgence of UDN it would appear that the disease is wearing itself out, as the salmon's resistance to it improves.

Hatcheries and Rearing Stations for Salmon—Ova production to the eyed stage at the Department's hatchery on the River Owenea in the 1975/76 season totalled 40,000 eyed ova.

The Department continued to advise and assist the Boards of Conservators in the operation of their hatcheries and rearing stations. The Galway and Drogheda Boards of Conservators operate rearing stations at Cong and Virginia respectively. Both stations rear the unfed fry to the autumn fingerling stage. Almost the entire stock from the rearing station at Virginia was used for restocking the Boyne and its tributaries. In 1975/76 380,000 ova were laid down and the survival at the summerling stage was 165,000 or 43%. There was a loss of 15% between the green egg stage and the eyed stage and there was a considerable loss in early summer due to a sudden rise in temperature.

The Cong rearing station had a successful year. There was a survival of 83,000 autumn fingerlings from 145,000 eyed ova (57%). The progeny from Cong were stocked in the River Moy, the Owenmore River and the Kilcolgan River as well as into the Corrib system. 5,000 were reared to the smolt stage for cage rearing at the BIM installations at Killary Harbour.

An incubation station on the Glencullen River, a tributary of the Owenmore system, is operated by the Bangor Board. Fish were removed at spawning time from the River, the ova were laid down in a battery-type incubator and transferred to the Cong rearing station at the eyed ova stage. In the 1975/76 season 64,000 ova were laid down. The survival rate to the eyed stage was 36,000 representing a mortality of 44%. The inordinately high mortality is attributed to size variation in the development of the ova in the fish before spawning. Some fish produced both normal size ova and small ova. The small ova were not fertilised artificially as none of them had eyed. The small ova measured 5,002 per litre whereas the normal size ova measured 2,998 per litre at the eyed stage.

Juvenile Salmonid Surveys—In the Boyne system more than thirty population estimates were made in 24 tributaries. The Mattock and Milltown were the most productive rivers sampled. In 1976 the Mattock had 1.8 fish and the Milltown 1.5 fish per sq. metre. These figures for productivity fall short of a yield of 2.0 fish per sq. metre. which was obtained in the Riverstown River in 1973. This river is at present lost to the system due to drainage.

A number of rivers such as the Clady, Skane and Boycetown which were dredged early in the drainage programme still show poor recovery. The Stoneyford and Trimblestown which were drained more recently appear to be recovering at a much faster rate. These rivers are now being stocked with small numbers of reared fish.

Monitoring of the fish stocks and invertebrate fauna of the Smearla River continued in 1976. A series of stations for estimating juvenile salmonid densities, which were assessed in 1975, were again electrically fished in 1976 and sub-samples of the populations were taken to determine the growth rate. The purpose of the investigations in the Smearla is to assess the loss to the Feale system in terms of nursery area when planned impoundments and abstractions scheduled for the Smearla takes place. The Smearla is considered to be one of the most important nursery streams of the River Feale.

A census of juvenile salmonids, with particular emphasis on young salmon, was undertaken in September 1976, on the two main spawning streams of the Owenea River—the Glen and the Stracashel. Densities of juveniles from a previous survey carried out in 1968 and 1969 were used as a comparison with existing juvenile stocks in these areas. Despite the reported decrease in spawning stock evidenced by the decrease in redd counts, the salmon population was similar to that obtained in the earlier surveys except for minor variations in age composition. There were fewer 0 group salmon in the Stracashel in 1976 but the density of one and two age groups was similar to 1968 and 1969 at 0.2 and 0.22 per m^2. The brown trout in all age groups showed an increase over the 1969 figures. In the Glen River the 0 group salmon were more plentiful than in 1969, the 1+ salmon were the same as in 1969 but the 2+ salmon showed a slight increase. Brown trout for all age groups were more plentiful in 1976 at 0.12 per m^2 than in 1969 when the population was estimated at 0.06 per m^2.

The Rivers Meelagh, Coombola and Ouvane which flow into Bantry Bay were electrically fished to determine the population of juvenile salmon. In the Meelagh and Ouvane the stocks were very sparse at approximately 0.04 fish per m^2. The Coombola gave a better yield at 0.3 per m^2. The paucity of juvenile salmon is due to the fact that there are not sufficient spawners in the system. The redd count has shown a steady decline since 1974 due to the intensity of drift netting in Bantry Bay.

Environmental Studies—A collection of fish and fauna are being analysed from the River Boyne, prior to the operation of a base metal mining operation, to determine the present level of heavy metals on fish and their food before any additional minerals leach into the river. The organs being analysed are the muscle, gonad, liver and brain tissue of trout and salmon of various age groups to assess the level in the various tissues and its relationship to the age of fish.

With the assistance of Donegal County Council, an experiment is in progress to design a suitable soakaway pit for degradation of

Lindane—a toxic organochlorine present in most sheep dips used in this country. The pit was lined with gravel and filled with peat moss. The indications from the experimental soakaway are encouraging. The run-off from the soakaway has resulted in a considerable reduction in the toxic substances in the sheep dip.

Sea Trout—A distribution map of sea trout for the inland waters was compiled. Comparison with similar data from Britain suggests two different patterns in the two islands. Irish sea trout remain a shorter time at sea than do the British stock and are generally located in the lower reaches of the larger rivers. However, in the smaller rivers, particularly along the west coast, they migrate further upstream than the salmon.

Some preliminary investigation of the freshwater phase of the sea trout was carried out including an early fry feeding experiment using natural food under hatchery conditions. This was compared with the natural food in the stomachs of a collection of fry from a stream and lake in the same general area. The summer algae community of a sea trout nursery stream was described in qualitative and quantitative terms. This work was carried out with the assistance of a student under the Department's summer bursary scheme. A paper on this study has been prepared and submitted for publication.

Work on a restocking programme was commenced in the Lackagh River system with a view to increasing the yield of sea trout in this system. Juvenile stock assessments were carried out on a mixed fishery, the Clonee River, in Kenmare Bay. Indications are that the fishery is predominantly salmon although some sea trout were taken.

Scale collections over a two-year period from the Moy draft net fishery and from the rod catch of two angling seasons from the Currane River in Waterville were examined. Both stocks display various characteristics which are typical of sea trout feeding in the Atlantic. Moy sea trout are, however, short-lived and consequently the majority are small, few age categories are represented and they mature relatively early. The reverse is true of sea trout from Waterville. Other aspects of the biology of sea trout which are under investigation include stomach content analysis, parasitology and the fecundity of different populations.

Lake Surveys—A number of brown trout lakes in the Dunfanaghy area of Donegal were surveyed at the request of the Dunfanaghy Anglers' Association to determine the level of brown trout stocks. Gill nets of 1"-3" mesh were fished in Sessiagh Lake, New Lake, Port Lough and Agannive Lough.

Sessiagh Lake, one of the few lakes in Donegal with a bicarbonate alkalinity in excess of 1.0 (in milliequivalents), had an adequate stock of trout of good size (mean weight 515 g.). New Lake, as the name implies is a recently-formed lake, being once part of the sea, had a small number of trout, average weight 394 g. The growth rate was

good but there was little or no recruitment due to the paucity of nursery streams. To provide stock for New Lake, the Ray River was electro-finished and a total of 211 brown trout were stocked into it. These were finclipped before release in order to obtain information from anglers on the success rate of restocking.

The other two lakes surveyed, Port Lough and Agannive, are oligotrophic lakes with a trout population typical of this type of lake. The lakes were overpopulated with small slow-growing brown trout, so that they require to be thinned out at regular intervals.

Rainbow Trout—Overall production of rainbow trout for the country for 1976 was only 160 tonnes. This figure is a significant reduction on the 1975 figure which was 221 tonnes. The reduction was due to the prolonged drought in 1975 which gave a poor return of fingerlings for fattening. This was followed by the shorter but more severe drought in July and August 1976 when total cessation of feeding was necessary. As a result growth was greatly retarded.

During the year a small scale experimental unit was set up in Glenties. Some 50,000 eyed ova were imported from the Isle of Man from a certified specific pathogen-free stock. The purpose of the import was two-fold (1) to assess the vulnerability of the disease free stock to the existing strain of I.P.N. and (2) to provide the nucleus of a separate brood stock for selective breeding experiments and to add to the genetic pool of existing commercial brood stocks. In spite of very low temperatures on hatching and difficulty in getting the fish to feed, an 11% mortality was recorded from hatching to the 4 month old stage.

In April, 20,000 fry were transferred to the Inland Fisheries Trust farm at Fanure, Roscrea where I.P.N. was present both in brown trout and rainbow trout. In July during a period of high temperature an outbreak of I.P.N. was confirmed among brown trout at Roscrea. However, imported Isle of Man stock in adjoining ponds were not affected and no mortalities were recorded in the native rainbow trout stock. The Isle of Man stock were transferred to a commercial fish farm and placed downstream of stocks where subclinical I.P.N. was diagnosed. The imported stock from the Isle of Man exhibited clinical signs of I.P.N. when stressed by overcrowding and high temperature, but mortalities were low at 5%. The results are not very conclusive but they suggest that a stock certified to be free of I.P.N. may become infected with I.P.N. virus; but since the I.P.N. virus strain present in Irish Stock has a very low virulence, this pathogen disease free stock can be imported without major losses to farms where diseases have been isolated, provided stocks are not stressed by poor husbandry or overcrowding.

Major losses occurred at Glenties in the imported stocks in August when temperatures exceeded 24°C and an algal bloom occurred in two of the rearing ponds. Pathological examination failed to identify the causative organisms. It was concluded that the mortality was due

to low oxygen and high temperature in overcrowded conditions. By December 1976, the best fish averaged ¼ lb and 1,000 have been retained for brood stock and experimental work planned for 1977.

A further outbreak of kidney disease was noted in two farms where water supplies are very low in minerals. The condition was not as severe as in 1975. The results of the investigations into the disease are being prepared for publication. Advice was given to a number of prospective fish farms on the biological requirements for setting up fish farms both in the marine and freshwater environment. Considerable interest is being shown in the farming of rainbow trout in the sea and requests for advice on the technical problems associated with different culture systems are an increasing feature of the Department's routine advisory work.

Eels—Under the Department's studentship scheme a student was appointed to study the eel population of the Burrishoole River System. The study will include an assessment of the immigrant elvers and the distribution of yellow eels in the system and the yield from the fishery in terms of migrating silver eels. The study commenced in October 1976.

Arising from the country-wide survey which extended over a ten-year period advice was given to the general public on the feasibility of the commercial exploitation of eels in the various systems.

An effort is also being made to collect reliable catch statistics on eels as recommended by the ICES/EIFAC working group on eels. There is little information on the exploitation of the yellow eel stocks. The silver eel fishery is limited to a few river systems.

During the year a survey of the yellow eel stocks of Caragh Lake, Co. Kerry, was carried out. The lake is oligotrophic with a surface area of 430 hectares. Eels were captured using summer fyke nets set in trains and fished overnight. In comparison with data from other waters in the country, the stock of eels was considered to be a meagre one and the lake would not sustain a commercial fishery. A total of 39 eels was captured in three 24-hour fishings. These ranged in size from 32cm to 68cm with a mean of 43.3cm. The mean weight was 167 g with a weight range of 20g to 720 g. Only fourteen of the eels, however, were marketable.

Advisory Work—The Department's staff continues to advise the Boards of Conservators and the general public on matters relating to the management of fisheries. Recommendations have been made on the restocking needs of rivers where there have been major fish kills due to pollution.

STUDENTSHIPS AND GRANT-AIDED RESEARCH PROJECTS.—A research studentship tenable at U.C.D. to study the profundal fauna of selected Irish lakes was initiated in October 1975. The aim of the study is to investigate the profundal fauna, particularly the chironomids, with regard to seasonal changes in larval densities,

duration or larvar instars, the emergence periods of their adults and the relationship of the benthic fauna to the chemical parameters of the water and sediments.

The biological impact of mining activities on fish, flora and fauna is also funded under the Department's Studentship Scheme. The Kilmastulla River, a tributary of the River Shannon which drains the Silvermines area, has been chosen for this study. Physico-chemical parameters are being measured to describe the nature of the effluent entering the river. The effects of heavy metal contamination on the fish life and microinvertebrates is being analysed. This study was started in 1975 and is continuing. This studentship is also tenable at U.C.D.

A study to predict the sustainable yields for the Lough Neagh pollan fishery was also started in October 1975. This study is under the supervision of the School of Biological and Environmental Studies of N.U.U. There is a commercial pollan fishery in Lough Neagh. Baseline data was available on the growth rate and fecundity for the northern section of the lake. Information is being processed on population numbers, growth, fecundity and probable patterns of recruitment and also on the current fishing pressures on the pollan by sampling the commercial catch.

In October 1976 two further studentships were awarded. One project was to study the effects of eutrophication on the fish population of the Killarney valley lakes. This studentship is tenable at U.C.D. Baseline data was available on the present trophic conditions of Lough Leane. The study will give information on the effects of the enrichment of Lough Leane on the various species of fish occurring in the lake. The second project was to study the elver and eel populations of the Burrishoole system. This studentship is tenable at Trinity College. Downstream migration eels were counted and sampled and arrangements are in hand to construct elver traps to study timing and intensity of the upstream run. A study of the population of immature eels in Lough Feagh is also being considered.

FISH DISEASE—All fish culture establishments were examined twice during 1976 as a matter of routine for the presence of disease and at all other times when disease was suspected. Salmon for export to some continental countries were examined and certified. Samples from all imported goldfish were examined and subjected to tests before sale. Examinations of shellfish for Salmonella and E. Coli were carried out on samples before export.

Infectious Pancreatic Necrosis (IPN) was found in most fish culture establishments but caused only low mortalities in most cases. Bacterial and parasitic conditions were frequently a cause for concern, with low waters favouring their presence. Treatments were successfully carried out. Work is almost complete on an undescribed condition in the eyes of trout. New "cell lines" were acquired to attempt isolation of a possible virus from UDN fish. However, it was impossible to obtain a fresh UDN affected fish.

In 1976 two papers have been published, one a review of diseases of freshwater fish in Ireland (IVJ Vol. 30, No. 7 pp 97-100) and the other a description of a previously undescribed disease of kidneys in Rainbow Trout (IVJ Vol. 31, No. 3, pp 46-48).

ENGINEERING

Arterial Drainage—Close contact was maintained between the officers of this Department and the engineers of the Office of Public Works to ensure that the post-drainage maintenance works on the Corrib, Mask and Moy Drainage Schemes were implemented in such a manner as would minimise the dangers to fish life in the various rivers resulting from the execution of these drainage schemes.

Pre-drainage conditions in the Mask/Carra Catchment on which work will be carried out in the near future continued to be monitored. The possible impact of the execution of the scheme on the water supply to Cong Salmon Hatchery and Rearing Station and the proposed Smolt Rearing Extension was the subject of investigation.

Particular attention was given to the design of fish passes to be incorporated in new weirs to be built as part of the river Maigue Catchment Drainage Scheme. These were designed by this Department and incorporated provisions in the case of one weir for the installation of an electronic fish counter unit together with an electrical fish-blocker unit.

Work continued on the major Arterial Drainage Scheme for the Catchment of the River Boyne and this was kept under observation. There were consultations with officers of the Office of Public Works to ensure that all practical steps were taken in the course of the work carried out on each river channel, or as soon as possible after its completion, to safeguard fishery interests in accordance with the proposals for this purpose drawn up by the Department of Fisheries.

A proposal to divert the present channel of the river Blackwater at Navan to facilitate mining development in that area was investigated and the impact on the fishery interests assessed

Electricity Generating Installations—The various installations for the generation of electricity by water power and by steam were kept under observation in consultation with officers of the Electricity Supply Board and the effects of the operation of installations on fish life monitored.

There were consultations between officers of the Electricity Supply Board and those of this Department, including the Department's Electronics Consultant, about the electric blocker unit which has been installed to prevent salmon entering the cooling water outlet of a major Thermal Station.

In response to the request of local fishery interests that an electric

fish counting unit be installed in the fish pass at the Cathaleen's Falls Hydro-electric Station on the river Erne, in addition to the existing mechanical fish counter, the proposal was investigated in consultation with the E.S.B. but it was not possible to come to a final decision in the matter.

Implications for the fishery interest arising from an E.S.B. proposal to instal a turbine at Parteen Weir on the river Shannon to avail of the compensation water passing down the original channel of the river Shannon for the generation of electricity were investigated in consultation with E.S.B. engineers. Suitable provisions in the design of the installation to safeguard the fishery interests were agreed.

Investigation of Fish Movements—Salmon smolts migrating downstream in the River Corrib were caught in the fish trap installed at Galway Sluice Barrage and counted. This operation commenced on 12 April and ended on 31 May by which time 40,100 smolts were trapped and released as compared with 51,050 in 1975, 75,100 in 1974 and 78,000 in 1973.

Once again difficulties were experienced in having the smolt diversion screens placed in position at the commencement of the smolt run. If the smolt trap is to operate effectively these screens must be in position to divert the smolts into the trap and to prevent them bypassing it. The absence of these screens at the particular time permitted the early running smolts to escape past the counting installation. This permitted the downstream run of kelts to by-pass the trap also. Negotiations are proceeding with a view to making the necessary arrangements to have these diversion screens placed in position in the month of March in future years.

The maximum number of smolts taken from the trap in one day during its period of operation was 5,000 on 20 April. In addition, two sea trout, five brown trout, twenty eels, eight perch and four pike were caught in the trap and subsequently released.

The fish counting installation designed by this Department for the Foyle Fisheries Commission and installed at Sion Mills Weir on the River Mourne, Co. Tyrone which, was installed by the Drainage Division of the Northern Ireland Ministry of Agriculture was kept under observation and various problems inevitably arising in the initial stages of operation were investigated and dealt with. This installation incorporates a Denil fish-pass, an electronic fish counter and electric fish-blocker unit placed on the crest of the weir. A fault developed in this blocker unit; this was rectified and the unit placed in proper working order.

Electronic Fish Counters—Existing electronic counting installations at the sites listed below were maintained. The number of fish re-

corded as passing through each unit are summarised in the table appended under:

River	Location	Total Count	Daily Maximum	Date
Bandon	Bandon Weir	2,521	144	12 July
*Bunree	Bunree Falls	—	—	—
Blackwater	Clondulane Weir	3,362	114	27 September
†Boyne	Blackcastle Weir	412	24	7 June
Corrib	Galway Sluice Barrage	17,424	973	22 June
Inagh	Ennistymon Falls	466	62	19 May
Liffey	Islandbridge Weir	843	51	31 July

* Installation closed down due to problems experienced with the tunnel and the counter installation and attendant problems.

† Difficulties were experienced here due to variations in the electricity supply to the counter. The fish pass in which the counter is installed was closed also to enable fish to be trapped for stripping purposes in October, November and December.

The wide gap resistivity counting installations designed by the Department's Engineers and Electronics Consultant for Kerry County Council was commissioned at the Ponding Weir on the river Feale near Finuge. This is the first installation of its kind installed in this country and it is similar in design to such installations which have been provided at sites in Britain and which were pioneered by the Department's Electronics Consultant.

It was possible to make further advances in the field of wide gap counting with the development of an improved bio-electric amplifier for the counting system (Code name—Delta Vee) which operates on the principle of recording fish passage by detecting electric signals emanating from the muscle action of swimming fish.

The Department is represented at the British based Fish Counter Liaison Group which meets twice annually to exchange information on progress in automatic fish counting.

An electronic fish counter was installed at the new Denil Fish Pass which was built at Cork Waterworks Breakwater Weir in 1975 and this came into operation on 13 May, 1976. From that date to the end of the year 627 salmon were recorded as passing through this counter and the maximum daily number noted was 32 on 17 May. The number counted does not represent the total number passing through the fish pass as the working of this unit was sabotaged on a number of occasions by poachers. The tunnel was damaged and the operation of the counter interfered with so the unit had be removed for repairs during the months of August and September.

Fish Culture Installations—The salmon traps and weir at Rosnalee on the Munster Blackwater which are used to catch brood stock for Mallow Hatchery owned by the Lismore Board of Conservators were repaired under the supervision of the Department's engineers. Repairs to the hatchery building were also carried out.

The Galway Board of Conservators continued to operate the salmon hatchery and rearing station at Cong, Co. Mayo, successfully. The staunching work which was carried out by the provision in the Autumn of 1975 of an impermeable skin on the upstream face of the weir supplying this installation proved its worth during 1976 as the water supply to the rearing ponds continued uninterrupted throughout the period of drought which occurred.

The Drogheda Board's hatchery at Virginia, Co. Cavan, again had water shortage problems which necessitated the transfer of the stock into the Boyne earlier than the normal transfer time.

The operation of the Glencullen salmon-trapping and ova-incubation station was supervised and the staff of the Bangor Board of Conservators were assisted in its operation.

Fishery engineering advice continued to be provided to the Salmon Research Trust of Ireland Incorporated and detailed plans for a new fresh water intake to the brackish water rearing unit were drawn up and the execution of the works supervised.

A detailed site survey was carried out and a design prepared for an adult salmon trapping installation on the Erriff river in Co. Mayo.

A design was prepared for a salmon holding pen at the Moy fishery traps and this was made available to the Ballina Board of Conservators.

Rainbow Trout Farming—Arising from the fact that fish farming projects became eligible for a grant under the Farm Modernisation Scheme there was a considerable increase during the year in the number of inquiries for assistance and advice in the establishing of fish farms for the production of rainbow trout for human consumption. Many proposals were investigated and the sponsors advised on their viability. Engineering outline designs were prepared for six installations on five rivers and one tidal bay. In one case the Department's engineering staff supervised the construction of a fish farm unit which they had designed for the owner and it was brought into production.

Engineering advice on request was provided to the owners of existing rainbow trout farms.

Eel Fishery Development—Eel fishery installations were investigated and the owners advised on necessary improvements. In addition, new site applications for authorisation were investigated.

Initial trials of the electrical guidance system for silver eels which had been installed at the Killaloe Eel Weir on the river Shannon proved inconclusive because of problems encountered on the site due to circumstances outside the control of the Department. Further experimental work is continuing. The technology on which these experiments were based was the subject of a paper which was presented at the ICES/EIFAC Symposium on Eel Research and Management which was held in Helsinki, Finland.

Application of Electricity to Inland Fisheries—Research and development work on application of electricity to inland fisheries was continued by the Department's consultant at the Field Laboratory at the State Salmon Hatchery at Glenties, Co. Donegal, in association with the Department's engineers. Reference has already been made under the appropriate headings to works undertaken or investigations carried out in this field during the year.

Control of Discharge of Effluents—Proposals for the treatment and discharge of effluents from the existing and projected undertakings sponsored by industrialists and Local Authorities into rivers, estuaries and the sea were examined and advice was supplied on measures to prevent damage to sea and inland fisheries. The number of cases dealt with during the year reached a very high level reflecting the increasing interest and concern about such matters.

This year was a significant one in such matters as it marked the emergence of the Water Pollution Bill sponsored by the Department of Local Government with whom there were many consultations about the provisions of the Bill and in particular the proposal to revoke Sections 171 and 172 of the Fisheries (Consolidation) Act 1959.

Water Abstraction—Major water abstraction schemes continued to pose problems to inland fisheries conservation and management. The Department's engineers continued to advise Local Authorities and private firms of provisions to be made in the design and operation of water abstraction schemes to prevent damage to fisheries. During the year it was found necessary to pay particular attention to investigation of measures that could be implemented to prevent the possibility of damage to fish stocks by the discharge of waste waters from water treatment works. In particular a proposal to abstract water from the river Boyne and from its estuary for a major industry was examined and commented on.

A proposal to abstract water from Lough Muckno was investigated and continues under study.

A proposal to abstract substantial quantities of water from Lough Conn was the subject of detailed investigation and consultations between the engineers of the Department of Fisheries, the Office of Public Works, Mayo County Council and their consulting engineers

with a view to finding a solution to the problems for fisheries interests arising therefrom.

Bye-Laws, Licences, Definitions—Maps were prepared in connection with various Bye-Laws, Orders and Licences and other statutory instruments and specialist's advice was supplied to various Boards of Conservators on request in relation to the marking of half-mile limits in connection with fishery protection work including attendance at Court to give expert evidence on such matters.

Miscellaneous—The Inspector and Engineer was appointed as Chairman of the Inland Fisheries Trust Incorporated and acted in this capacity during the year. He continued to act as Fishery Engineering Consultant to the Salmon Research Trust of Ireland Incorporated and the Foyle Fisheries Commission. He also continued to act as the Departmental representative on the Committee appointed by the Minister for Defence to make arrangements for the construction of a sail training vessel to replace the "Asgard".

During this year the Inspector and Engineer prepared outline proposals for a small research station somewhat on the lines of that operated by the Salmon Research Trust of Ireland at Furnace, Co. Mayo, for the study of sea trout on the Suirstavat River system on the Isle of Lewis, Scotland, on behalf of the Atlantic Salmon Trust.

River Improvement Schemes—The major fish passage facility provided on the river Feale, County Kerry, between Finuge Bridge and the water abstraction ponding weir continued to operate very successfully as a means of facilitating the passage of fish across this stretch of river at which they were obstructed at times of low flow in the past. It also enhanced the possibility of angling being carried out during the year in this stretch of river at times of low flow when this was not possible prior to the construction of these works.

There were continued consultations with representatives of Bord Failte about the improvement of angling facilities on the river Roughty at Kenmare.

A comprehensive survey was carried out of the Carrowniskey River in the Ballinakill fishery district and preparations made for the drawing up of a river improvement programme for this river.

The Rosses Anglers' Association was advised on improvement works on the Owenamarve River to be carried out with the assistance of Bord Failte.

FOYLE FISHERIES COMMISSION

The Commission is comprised of a senior and a junior member appointed by the Minister for Fisheries and a senior and a junior member appointed by the Department of Agriculture for Northern

Ireland. The post of Chairman rotates each year between the senior members. During the year under review it was held by the Dublin senior member.

The Annual Report of the Commision for 1976 gives detailed information on the Commission's activities during that year.

The spawning count of 3,058 for 1976 represents an increase on the figure of 2,696 recorded in 1975.

Catch returns for 1976 show a reduction on those recorded for the previous year. The catch of salmon and grilse by commercial engines in 1976 was 38,931 as compared with 54,904 in 1975. The rod catch of salmon, grilse and sea trout in 1976 was 5,386 as compared with 7,396 in the previous year.

The net profit arising out of the operation of the Commission's private fishery amounted to £14,256 (£16,729 in 1975) which sum is credited to the Commission's Accumulated Revenue Account.

Contributions totalling £84,356 were received or receivable by the Commission in equal shares from the Exchequers in Dublin and Belfast during the year ended 30 September 1976. These contributions equalled the deficit in the Commission's Accumulated Revenue Account at 30 September 1975. The deficit which accrued in respect of the year ended 30 September 1976 amounted to £79,392.

The Report of the two Canadian experts who carried out an investigation in 1973 into the fisheries of the Foyle Area was published in February 1976. The Advisory Council for the Foyle Area submitted its views on the Report to the Commission following which the Commission devised a Management Plan for the Foyle Fisheries which it submitted in December 1976 for their consideration to the Department of Fisheries and to the Department of Agriculture for Northern Ireland.

The Accounts of the Commission for the year ended 30 September 1976 and particulars of Regulations made by it during 1976 are included as appendices to its 1976 Annual Report.

INLAND FISHERIES TRUST INCORPORATED

The Council of the Trust consists of seven members, three being elected and four being nominated by the Minister. In 1976 the nominated members from the Department's staff were the Inspector and Engineer, who is the present Chairman of the Council, and an Assistant Principal Officer. The annual report of the Trust for 1976 gives a review of its work during the year. The grant-in-aid paid to the Trust by the Department in the calendar year 1976 amounted to £525,000.

Work continued during the year on the development, improvement, and maintenance of trout fisheries on rivers and lakes. 697,603 brown trout consisting of ova, fry, summerlings, fingerlings, yearlings and adults were released into waters to supplement natural spawning. Further work was carried out on spawning and nursery grounds to improve natural spawning.

In controlling predators over 21 tons of pike, 40 tons of perch and 5 tons of perch spawn were removed from trout lakes and rivers. Surveys were made of new waters to assess their suitability for development as trout or coarse fisheries. Several hundred additional facilities were provided for coarse anglers on 18 lakes at 16 centres.

The Trust were active in promoting sea angling in 1976. A survey of the bass angling situation at Rosscarbery and a preliminary shore survey of the Skibbereen/Mizen Head area was carried out. Shore angling and deep sea angling in the Clifden area and rock fishing in the Dingle Peninsula were surveyed. The Trust assisted ABU and Bord Failte in making two new films on shark and rock fishing from the shore.

The Trust continued to identify and remedy the causes of pollution in waters under its control and with the co-operation of the Boards of Conservators, officers of the Agricultural Advisory Services and local authorities enjoyed considerable success in pollution control during 1976.

THE SALMON RESEARCH TRUST OF IRELAND INCORPORATED

The Committee of Management of the Trust consists of seven members, two of whom are nominated by the Minister, three being nominated by the Chairman of Arthur Guinness, Son & Co. Ltd. plus two elected members. The members nominated by the Minister in 1976 were an Assistant Secretary and an Inspector from this Department.

The Annual Report of the Trust for 1976 gives a detailed account of its work during the year. The grant-in-aid paid to the Trust by the Department in the 1976 financial year amounted to £9,200.

The results of census work by the Trust at their Burrishoole Fishery, Co. Mayo, in regard to upstream and downstream movement of salmon indicated that the run of salmon (2-sea winter fish) was maintained at the same level as in 1975 but was composed largely of small spring fish with only a small component of summer fish.

The grilse total was slightly lower in 1976 maintaining the general level of counts recorded in 1974 and 1975. The survival rate for the 1972 brood stock from ova to smolt and from smolt to grilse was also

lower than in previous years. Salmon smolt production was good in 1976. UDN among salmon kelts showed a further decline in overall degree of infection.

Returns from reared smolts were poor in 1976, averaging 1.61% compared with the return of wild smolts of 6.0%, itself a low return rate. There were 29 recaptures from 1+ and 2+ smolts which escaped after 5 months post-smolt rearing in sea cages, proving that imprinting of homing behaviour occurs in the rearing ponds. About 9% of all known recaptures of reared fish was made in local coastal nets and there were a further 6 recaptures of small summer fish (2-sea-winters) derived from smolts of three generations of grilse parentage.

The high-fat diet experimental work was continued and other experimental rearing techniques which were carried out included:—

(i) use of warmed water during late incubation and early feeding;

(ii) evaluation of artificial substrates during yolk sac resorbtion by alevins;

(iii) utilisation of dry pellet food only, for first feeding; and

(iv) attempted production of tetraploid salmon embryos using cold-shock technique.

A total of 15,080 smolts were released to sea and 4,235 transferred for on-rearing in sea-cages in 1976. The general health position of smolts was good over the year although there was some infection with furinculosis and fungus prior to release.

The numbers of sea trout were about the same in 1975 although there were indications that the proportion of finnock (0+ sea years) was higher in 1976. The incidence of UDN/fungus infection among sea trout kelts in 1975/76 increased slightly but was limited to the immediate post-spawning period.

Sea trout kelts were not tagged in 1976 but additional recaptures from those tagged in 1974/75 have raised the recapture rate to 48.5%.

MANAGEMENT OF STATE FISHERIES

In 1976, 131 State owned fisheries—in the main vested in the Land Commission—were managed by Fisheries Division. Rents received during the year amounted to £4,148 compared with £4,180 in 1975.

Seventeen of these fisheries which fell due for re-letting were advertised during the year.

INTERNATIONAL AND OTHER CONFERENCES

During the year Inland Fisheries Division was represented at the following conferences, study groups, etc:—

Abroad

(1) International Council for the Exploration of the Sea, Copenhagen.
(2) Fish Counter Liaison Group, Reading, England.
(3) European Inland Fisheries Advisory Commission, Helsinki.
(4) Salmon Research Group, Berwick-on-Tweed.
(5) Fish Disease course at Sterling University.
(6) Study tour of sea trout research and development in UK.
(7) Tour of salmonid rearing installations in Sweden.
(8) EIFAC/ICES Eel Group.

Home

(1) Freshwater Research Group.
(2) Technical Project Committee of the Kerry County Council.
(3) Steering Committee of the NSC on the Killarney Lake Project.
(4) Pollution Control Committee of Donegal County Council.
(5) Water Resources Advisory Committee of An Foras Forbartha.
(6) River Erne Joint Protection Scheme
(7) Committee of Management of the Salmon Research Trust.
(8) Irish Specimen Fish Committee.
(9) Mariculture sub-committee of the Marine Science Association. NSC.
(10) Unesco Hydrological Decade National Committee for Ireland.
(11) Committee concerned with the replacement of the "ASGARD".
(12) Water Pollution Advisory Council.
(13) Symposium on Salmon Research in Ireland (Salmon Research Trust Inc.).
(14) IIRS Seminar on Effluent Monitoring.

LEGISLATION

The Foyle Fisheries (Amendment) Act, 1976 became law on 13 April, 1976. This Act remedies a technical defect in the Foyle Fisheries Acts which was found by a High Court judgment in 1975.

The Fisheries (Amendment) Act, 1976 became law on 7 July, 1976. This Act postpones for a year elections to Boards of Conservaters and empowers the Minister to make Orders postponing the elections beyond this period if he thinks fit. It also removes the limit on the amount of the increase which may be made in respect of the duties on ordinary fishing licences. Particulars of the Statutory Instruments relating to Inland Fisheries made during the year are included in Appendix No. 22

BRIAN LENIHAN,
Minister for Fisheries and Forestry.

13 October, 1978.

APPENDICES TO THE REPORT ON SEA AND INLAND FISHERIES FOR THE YEAR 1976

Appendices 11 to 17 are compiled from returns furnished by licence holders in pursuance of the Statistics (Salmon, Sea Trout and Eels) (No. 2) Order, 1945.

APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed, 1975 and 1976

KIND OF FISH	QUANTITY		VALUE	
	1976	1975	1976	1975
DEMERSAL	Tonnes	Tonnes	£'000	£'000
Flat Fish				
Brill ...	125	95	65	45
Dabs ...	278	188	40	21
Megrims ...	210	180	31	20
Plaice ...	1,700	1,478	618	407
Soles ...	268	151	398	181
Turbot ...	168	99	134	50
Other Flat Fish ...	684	371	59	31
Round Fish				
Cod ...	5,563	4,314	1,347	746
Haddock ...	1,325	1,020	249	184
Hake ...	184	110	53	19
Saithe ...	1,445	1,176	205	139
Whiting ...	9,166	7,475	1,003	669
Other Round Fish ...	1,032	1,784	70	62
Ray/Skate ...	1,663	1,530	380	307
TOTAL DEMERSAL	23,811	19,971	4,652	2,881
PELAGIC				
Herring ...	22,012	28,808	3,133	3,227
Pilchard ...	—	99	—	4
Mackerel ...	14,394	13,354	877	584
Sprats ...	8,576	3,598	218	60
TOTAL PELAGIC ...	44,982	45,859	4,228	3,875
TOTAL WETFISH ...	68,793	65,830	8,880	6,756
CRUSTACEANS				
Crabs ...	1,105	645	155	72
Crawfish ...	84	85	379	275
Dublin Bay Prawns ...	1,852	994	587	237
Lobsters ...	370	331	1,350	842
Palaemonid Shrimp ...	55	32	71	34
TOTAL CRUSTACEANS	3,466	2,087	2,542	1,460
MOLLUSCS				
Escallops ...	367	341	128	101
Queen Escallops ...	11	12	1	1
Mussels ...	3,970	3,651	94	75
Oysters ...	885	498	612	248
Periwinkles ...	2,568	2,995	367	352
Palourdes ...	190	19	105	13
Other molluscs ...	61	385	37	125
TOTAL MOLLUSCS ...	8,052	7,901	1,344	915
Sea-Urchins ...	352	209	98	42
TOTAL ALL FISH ...	80,663	76,027	12,864	9,173

In addition to the above landings into the Republic, 2,843 tonnes of fish and 5,286 tonnes of shellfish valued at £523,000 and £1,946,000 respectively were landed directly into foreign ports or transhipped at sea for export, by Irish registered vessels.

APPENDIX No. 2

Comparison of the Average Price per metric ton of various kinds of Sea Fish for the years 1969-1976.

Species	1969	1970	1971	1972	1973	1974	1975	1976
	£	£	£	£	£	£	£	£
Sole ...	451	509	529	624	931	1,006	1,200	1,485
Brill ...	192	221	240	277	354	411	477	515
Turbot ...	197	211	228	275	358	444	510	799
Plaice ...	156	184	184	192	217	247	276	364
Dabs ...	57	69	71	68	93	81	114	143
Megrims ...	62	77	66	62	95	94	114	149
Ray/Skate ...	90	111	121	138	161	191	200	228
Cod ...	86	97	98	116	139	176	173	242
Haddock ...	70	74	53	63	96	111	181	188
Hake ...	137	126	130	125	141	150	176	288
Whiting ...	43	50	40	49	68	70	90	109
Pollock ...	46	53	61	64	82	97	118	142
Herrings ...	23	28	37	44	72	100	112	142
Pilchards ...	—	—	—	11	36	23	42	—
Mackerel ...	28	38	38	32	46	43	44	61
Sprats ...	9	12	11	11	17	19	17	25

N.B.—"Average price" as shown in this table represents total value divided by total weight for each kind of fish, year by year. It does not purport to take direct cognizance of any abnormal rise or fall in price attributable to a seasonal glut or shortage of a particular kind of fish.

APPENDIX No. 3

Value of Landings of Sea Fish (excluding Salmon) at ports at which the value of such landings exceeded £225,000 in 1976.

PORT	TOTAL		DEMERSAL		PELAGIC		SHELLFISH	
	M.Tons	£'000	M.Tons	£'000	M.Tons	£'000	M.Tons	£'000
1. Killybegs	20,339	2,217	5,216	697	15,094	1,481	29	39
2. Howth	8,362	1,205	5,589	898	2,650	265	123	42
3. Castletownbere	6,602	857	935	288	5,485	491	182	78
4. Dunmore East	3,533	748	513	149	2,982	565	38	34
5. Galway	4,780	727	1,792	375	2,769	303	219	49
6. Skerries	2,388	478	1,693	285	115	17	580	176
7. Burtonport	3,011	459	719	162	2,275	235	17	62
8. Greencastle	1,725	446	1,672	404	—	—	53	42
9. Fenit	662	420	35	11	—	—	627	409
10. Kilmore Quay	1,364	413	973	275	12	2	379	136
11. Clogherhead	1,454	367	759	149	37	4	658	214
12. Dingle	2,474	342	698	165	1,765	134	11	43
13. Cobh	1,210	284	65	28	1,140	238	5	18
14. Valentia	1,193	251	209	54	934	82	50	115
15. Clarinbridge	311	226	—	—	—	—	311	226

APPENDIX No. 4

Imports and Exports of Fish and Fishery Products in 1976 (as compared with 1975).

	Quantity		Value	
	1976	1975	1976	1975
	Metric tons	Metric tons	£'000	£'000
I.—IMPORTS				
Fish, fresh, chilled or frozen ...	4,041*	3,401*	2,401*	1,549*
Fish, salted, dried or smoked ...	1,466	1,554	866	715
Shellfish, fresh, salted or dried ...	572	486	468	435
Prepared or preserved fish	1,647	1,333	1,977	1,474
Prepared or preserved shell fish ...	35	34	74	58
Fishmeals and Fishoils ...	13,434	9,815	2,906	1,295
TOTALS ...	21,195	16,623	8,692	5,526
II.—EXPORTS				
Fish, fresh, chilled or frozen ...	17,418	18,517	9,918	7,053
Fish, salted, dried or smoked ...	6,597	8,753	2,244	2,159
Shellfish, fresh, salted or dried ...	7,624	6,131	5,721	3,160
Prepared or preserved fish	3,306	3,225	1,724	1,220
Prepared or preserved shell fish ...	52	53	78	46
Fishmeals and Fishoils ...	4,040	2,496	905	346
Landed directly into foreign ports or transhipped at sea for export, by Irish registered vessels				
I) Fish ...	2,843	2,051	523	330
II) Shellfish ...	5,286	3,545	1,946	810
TOTALS ...	47,166	44,771	23,059	15,124

* includes frozen fish products previously classified as prepared or preserved.

APPENDIX No. 5

HERRING FISHING, 1976

Ports at which more than 750 metric tons were landed	Total Quantity metric tons	Value £
1. Killybegs	8,934	1,184,772
2. Dunmore East	2,956	562,075
3. Galway	2,509	285,707
4. Howth	2,237	243,989
5. Burtonport	1,075	173,843
6. Cobh	1,034	231,920
7. Castletownbere	860	130,334
8. Dingle	753	79,291

APPENDIX No. 6

MACKEREL FISHING, 1976

Ports at which more than 200 metric tons were landed	Total Quantity metric tons	Total Value £
1. Killybegs	5,488	278,605
2. Castletownbere	4,625	360,581
3. Burtonport	1,200	60,754
4. Dingle	1,012	54,779
5. Valentia	591	34,545
6. Howth	413	20,518
7. Galway	259	16,816
8. Schull	248	15,709

APPENDIX No. 7

REGIONAL DISTRIBUTION AND CLASSIFICATION OF FISHING CRAFT AND OF PERSONNEL ENGAGED IN FISHING IN 1976

Coast	How Engaged	Men	Total Vessels	Motor Vessels							Boats propelled by outboard engines, sail or oars	
				Gross Tons								
				Over 75	51—75	26—50	16—25	11—15	10 and under		18′ Keel and upwards	Less than 18′ Keel
East (Omeath to Carnsore Point)	Solely	591	190	15	39	54	6	—	34		40	2
	Partially	343	112	—	—	—	—	—	22		67	23
	Laid-up		14	3	4	6	1	—	—		—	—
	Totals	934	316	18	43	60	7	—	56		107	25
South (Carnsore Point to Loop Head)	Solely	1,039	434	25	34	29	18	19	230		79	—
	Partially	1,020	328	—	—	—	—	—	37		225	66
	Laid-up		20	5	3	10	1	1	—		—	—
	Totals	2,059	782	30	37	39	19	20	267		304	66
West (Loop Head to Erris Head)	Solely	242	82	3	6	19	4	3	30		17	—
	Partially	1,410	505	—	—	2	—	1	140		241	121
	Laid-up		1	—	1	—	—	—	—		—	—
	Totals	1,652	588	3	7	21	4	4	170		258	121
North (Erris Head to Moville)	Solely	623	113	27	24	48	7	1	6		—	—
	Partially	2,125	658	—	—	1	1	7	305		281	63
	Laid-up		5	—	—	4	—	—	1		—	—
	Totals	2,748	776	27	24	53	8	8	312		281	63
Totals (All Coasts)	Solely	2,495	819	70	103	150	35	23	300		136	2
	Partially	4,898	1,603	—	—	3	1	8	504		814	273
	Laid-up		40	8	8	20	2	1	1		—	—
	Totals	7,393	2,462	78	111	173	38	32	805		950	275

APPENDIX No. 8

TRAWLING AND SEINING, 1976

Port or Locality	Number of men engaged	Number of vessels engaged	Tonnage of Motor Vessels			Fishing Period
			Not exceeding 10 tons	Over 10 tons	Over 25 tons	
Clogherhead ...	54	13	—	—	13	All year
Balbriggan ...	40	10	—	1	9	All year
Skerries ...	112	22	1	—	21	All year
Howth ...	192	39	1	—	38	All year
Dublin ...	4	2	2	—	—	Occasionally
Dun Laoire ...	35	7	—	—	7	All year
Wicklow ...	10	4	—	2	2	All year
Arklow ...	44	12	—	2	10	All year
Courtown ...	6	3	3	—	—	Summer
Rosslare ...	4	1	1	—	—	All year
Carne/St Helens ...	4	2	2	—	—	Occasionally
Kilmore Quay ...	110	22	—	1	21	All year
Duncannon ...	22	7	3	—	4	All year
Dunmore East ...	70	13	—	2	11	All year
Cheekpoint ...	6	2	2	—	—	Occasionally
Helvick ...	13	3	—	—	3	All year
Youghal ...	6	3	3	—	—	Autumn & Winter
Ballycotton ...	10	5	5	—	—	Spring & Autumn
Cobh ...	6	3	2	1	—	All year
Cork/Crosshaven ...	61	3	—	—	3	All year
Kinsale ...	4	1	—	1	—	All year
Union Hall ...	18	4	—	1	3	All year
Castletownshend ...	3	1	—	1	—	All year
Schull ...	27	5	—	—	5	All year
Cape Clear ...	5	1	—	—	1	All year
Castletownbere ...	78	12	—	—	12	All year
Ballinskelligs ...	5	1	—	—	1	All year
Valentia Island ...	5	1	—	—	1	All year
Portmagee ...	10	2	—	—	2	All year
Cahirciveen ...	14	2	—	—	2	All year
Dingle ...	71	12	—	—	12	All year
Carrigaholt ...	3	1	—	1	—	Spring
Seafield/Quilty ...	3	1	—	1	—	Spring
Aran Islands ...	103	19	3	—	16	All year
Galway ...	21	4	—	—	4	All year
Rossaveal ...	5	1	—	1	—	All year
Cleggan ...	8	2	2	—	—	All year
Achill ...	58	12	3	2	7	All year
Belmullet/Blacksod	5	1	—	—	1	All year
Killala ...	12	3	—	1	2	All year
Sligo ...	6	1	—	—	1	All year
Mullaghmore ...	6	2	2	—	—	All year
Killybegs ...	291	43	—	—	43	All year
Burtonport ...	167	30	—	—	30	All year
Bunbeg ...	8	2	1	1	—	Spring & Autumn
Buncrana ...	8	2	—	2	—	Autumn
Greencastle ...	145	25	—	—	25	All year
Magheraroarty ...	4	1	1	—	—	Autumn
Totals ...	1,902	368	37	21	310	

APPENDIX No. 9A.

STATEMENT OF ACCOUNT IN RESPECT OF REPAYABLE ADVANCES

Advances of £12,678,563 made to An Bord Iascaigh Mhara during the period of twenty-four years to 31 December, 1976 for provision of boats and gear and other purposes:—

Repayments of Principal:		£
made to 31 December 1975	...	1,206,278
made during year	...	176,365
Principal written off to 31 December 1976	...	1,208,876
		2,591,519
Balance of Principal outstanding at 31 December 1976		10,087,044

APPENDIX No. 9B

EXPENDITURE ON FISHERIES FOR THE YEARS ENDED 31 DECEMBER 1975 AND 31 DECEMBER 1976

(all figures rounded to nearest £1,000)

	1 Jan. 1976 to 31 Dec. 1976	1 Jan. 1975 to 31 Dec. 1975
	£	£
1. SEA FISHERIES		
By (a) Department of Agriculture and Fisheries (Fisheries Division)		
(i) Development	104,000	94,000
(ii) Fishery School	3,000	17,000
(iii) Fishery Harbours and other Marine Works	682,000	697,000
(b) An Bord Iascaigh Mhara		
(i) Administration and Current Development (grant-in-aid) ...	1,425,000	1,020,000
(ii) Capital Development (grant-in-aid)	2,750,000	1,570,000
(iii) Repayable Advances* (mainly for boats and gear) ...	2,000,000	2,700,000
(iv) Repayment of Advances written off	120,000	95,000
(c) Roinn na Gaeltachta Grants for marine works	356,000	299,000
2. INLAND FISHERIES		
By (a) Department of Agriculture and Fisheries (Fisheries Division) Development	616,000	392,000
(b) The Inland Fisheries Trust Incorporated (grant-in-aid)	525,000	430,000
(c) The Salmon Research Trust of Ireland Incorporated (grant-in-aid) ...	9,000	9,000
3. DEPARTMENT OF AGRICULTURE AND FISHERIES		
Salaries, Wages and other administrative Expenses for Fisheries Division ...	569,000	460,000
Totals ...	9,159,000	7,783,000

*A Statement of Account in respect of Repayable Advances is given in Appendix 9A.

APPENDIX No. 10

COASTAL EXTENT OF FISHERY DISTRICTS AND NAMES OF THE PRINCIPAL RIVERS IN EACH DISTRICT

District	Coastal Extent of District	Principal Rivers
No. 1 Dublin	Most easterly point on Red Island, Skerries, to Wicklow Head.	Liffey Vartry.
No. 2 Wexford	Wicklow Head to Kiln Bay, east of Bannow Bay, Co. Wexford.	Slaney Avoca.
No. 3 Waterford	Kiln Bay, east of Bannow Bay, to Helvick Head, Co. Waterford.	Suir Barrow Nore.
No. 4 Lismore	Helvick Head to Ballycotton Pier, Co. Cork.	Blackwater, Funcheon, Bride, Awbeg.
No. 5 Cork	Ballycotton Pier to Crow Head, Co. Cork.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarrif, Adrigole.
No. 7 Kerry	Crow Head, Co. Cork, to Kerry Head, Co. Kerry.	Roughty, Sheen, Finnihy, Blackwater, Sneem, Laune, Flesk, Maine, Caragh, Currane, Cummeragh, Inny.
No. 8 Limerick	Kerry Head, Co. Kerry, to Hag's Head, Co. Clare.	Shannon, Deel, Fergus, Mulcair, Little and Upper Brosna, Inny, Maigue, Feale.
No. 9[1] Galway	Hag's Head to the sea point of the boundary between the townlands of Keeraunagark South and Banraghbaun South, Co. Galway.	Corrib, Claregalway.
No. 9[2] Connemara	The sea point of the boundary between the townlands of Keeraunagark South and Banraghbaun South, Co. Galway, to Slyne Head, Co. Galway.	Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace.
No. 10[1] Ballinakill	Slyne Head to Pigeon Point, Westport Bay, Co. Mayo.	Culfin, Erriff, Bundorragha, Dawros, Carrowniskey, Bunowen (Louisburgh).
No. 10[2] Bangor	Pigeon Point to Benwee Head, Co. Mayo.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy.
No. 11 Ballina	Benwee Head to Coonamore Point, Co. Sligo.	Moy, Cloonaghmore (Palmerston), Easkey.

District	Coastal Extent of District	Principal Rivers
No. 12 Sligo	Coonamore Point to Carrickgarve, Co. Sligo.	Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
No. 13 Ballyshannon	Carrickgarve to Rossan Point, Co. Donegal.	Erne, Bundrowes, Bunduff, Eske, Eaney Water, Oily, Glen.
No. 14[1] Letterkenny	Rossan Point to Malin Head, Co. Donegal.	Owenea, Gweebarra, Gweedore (Crolly), Clady, Lackagh, Lennon, Crana.
No. 17[2] Dundalk	Carlingford Lough to Clogherhead, Co. Louth.	Fane, Dee, Glyde.
No. 17[1] Drogheda	Clogherhead to the most easterly point on Red Island, Skerries, Co. Dublin.	Boyne, Blackwater, Deel.

Note—The area comprised in the former No. 14[2] or Moville District was, by the Foyle Fisheries Act, 1952, incorporated in the Foyle Area which is administered by the Foyle Fisheries Commission.

APPENDIX No. 11

Quantity and Value of All Salmon and Sea Trout taken in 1974, 1975 and 1976 by Instruments of Capture.

SALMON

	1976	1975	1974	1976	1975	1974
Instruments	kgs.	kgs.	kgs.	£	£	£
Total for all engines	1,491,890	2,188,305	1,992,277	5,301,737	3,013,531	2,332,708
Total for rod and line	43,025	52,166	58,529	151,884	71,395	68,420
Total for drift nets	1,046,108	1,482,258	1,440,306	3,722,256	2,048,368	1,685,993
Total for draft nets	304,388	530,288	390,677	1,079,211	724,833	457,894
Total for stake nets, weirs, etc.	98,369	123,593	102,765	348,386	168,935	120,401

SEA TROUT

	1976	1975	1974	1976	1975	1974
Instruments	kgs.	kgs.	kgs.	£	£	£
Total for all engines	53,352	80,950	77,187	92,938	80,309	68,066
Total for rod and line	20,596	36,072	41,602	38,600	35,786	36,686
Total for drift nets	23,024	9,110	7,804	36,099	9,038	6,882
Total for draft nets	9,608	34,646	27,226	18,007	34,372	24,009
Total for stake nets, weirs, etc.	124	1,122	555	232	1,113	489

APPENDIX No. 12

Quantity and Value of Salmon taken in 1974, 1975 and 1976 by Fishery Districts

Fishery District	*	Quantity			Value		
		1976 kgs.	1975 kgs.	1974 kgs.	1976 £	1975 £	1974 £
Dublin ..	R	754	217	208	2,659	296	248
	N	1,546	879	2,330	5,454	1,201	2,765
Wexford ...	R	1,305	1,628	1,307	4,605	2,225	1,556
	N	15,162	11,692	5,778	53,483	15,981	6,751
Waterford ...	R	6,005	3,929	11,129	21,182	5,370	13,004
	N	208,386	279,893	169,351	735,060	382,577	197,879
Lismore ...	R	2,094	4,775	3,631	7,386	6,527	4,242
	N	119,243	173,342	116,698	420,617	236,935	140,525
Cork ...	R	3,435	2,825	4,633	12,115	3,861	5,413
	N	129,046	327,043	186,639	455,197	447,023	218,078
Kerry ...	R	3,223	4,174	4,638	11,368	5,706	5,420
	N	78,192	96,991	59,854	275,816	132,573	70,154
Limerick ...	R	3,804	9,262	7,884	13,418	12,660	9,212
	N	118,638	190,193	162,778	418,481	259,968	190,198
Galway ...	R	1,320	4,185	1,241	4,658	5,720	1,450
	N	66,498	118,105	36,139	235,507	161,435	42,226
Connemara ...	R	1,813	2,753	2,547	6,394	3,763	2,976
	N	5,160	14,783	11,450	18,202	20,207	13,378
Ballinakill ...	R	1,583	1,362	2,109	5,584	1,951	2,464
	N	6,779	17,159	8,777	23,913	23,455	10,300
Bangor ...	R	2,924	2,447	3,249	10,315	3,345	3,796
	N	107,438	142,774	157,857	378,978	195,152	184,451
Ballina ...	R	5,421	5,881	5,553	19,122	8,038	6,489
	N	234,428	235,919	392,281	826,919	344,790	458,687
Sligo ...	R	2,226	1,481	958	7,853	2,024	1,119
	N	13,783	16,118	21,759	48,619	22,032	25,424
Ballyshannon ...	R	2,017	2,096	2,017	7,115	2,866	2,357
	N	85,091	157,052	92,360	300,150	214,670	107,918
Letterkenny ...	R	4,573	4,457	4,390	16,131	6,092	5,130
	N	234,872	315,885	476,321	861,250	431,774	556,557
Dundalk ...	R	265	214	723	996	293	845
	N	13,519	23,656	17,046	50,669	32,334	19,918
Drogheda ...	R	262	481	2,310	983	658	2,699
	N	11,083	14,653	16,332	41,538	20,029	19,079
TOTALS ...		1,491,888	2,188,304	1,992,277	5,301,737	3,013,531	2,332,708

* R indicates capture by means of single rod and line;
N by means of nets, weirs, etc.

APPENDIX No. 13

Quantity and Value of Sea Trout taken in 1974, 1975 and 1976 by Fishery Districts

Fishery District	*	Quantity			Value		
		1976 kgs.	1975 kgs.	1974 kgs.	1976 £	1975 £	1974 £
Dublin ...	R	1,083	1,209	1,541	2,030	1,199	1,359
	N	2,107	4,195	3,736	3,949	4,162	3,295
Wexford ...	R	565	681	1,310	1,059	676	1,156
	N	899	2,368	2,167	1,685	2,349	1,911
Waterford ...	R	311	683	1,014	583	677	894
	N	4,461	417	206	8,357	414	182
Lismore ...	R	431	503	386	808	499	341
	N	1,299	1,977	1,696	2,435	1,961	1,496
Cork ...	R	1,556	2,371	2,224	2,916	2,353	1,961
	N	4,055	1,114	801	1,402	1,105	706
Kerry ...	R	2,324	4,297	3,993	4,355	4,263	3,521
	N	3,597	2,214	1,037	6,740	2,196	914
Limerick ...	R	2,206	8,421	7,816	4,134	8,355	6,893
	N	3,473	15,568	16,380	5,659	15,445	14,444
Galway ...	R	371	768	953	695	762	840
	N	2,154	2,197	1,953	4,036	2,179	1,722
Connemara ...	R	3,280	4,223	5,366	6,148	4,190	4,732
	N	2,449	983	637	4,590	976	562
Ballinakill ...	R	2,360	2,295	2,586	4,423	2,277	2,281
	N	4,478	1,197	1,048	8,392	1,188	924
Bangor ...	R	1,781	2,823	4,251	3,337	2,800	3,749
	N	383	1,798	949	718	1,784	837
Ballina ...	R	666	1,872	1,952	1,249	1,857	1,721
	N	446	1,570	1,259	836	1,558	1,110
Sligo ...	R	306	329	382	574	326	337
	N	794	378	163	1,487	375	144
Ballyshannon ...	R	356	629	679	666	624	599
	N	1,192	3,345	925	2,235	3,318	816
Letterkenny ...	R	743	2,758	4,062	1,392	2,736	3,582
	N	330	1,764	737	619	1,750	650
Dundalk ...	R	1,041	696	747	1,952	690	658
	N	448	1,751	863	839	1,737	761
Drogheda ...	R	1,216	1,515	2,338	2,279	1,503	2,062
	N	191	2,043	1,028	359	2,026	906
TOTALS ...		53,352	80,952	77,185	92,938	80,310	68,066

* R indicates capture by means of single rod and line;
N by means of nets, weirs, etc.

APPENDIX No. 14

Quantity and Value of Eels taken in 1974, 1975 and 1976 by Fishery Districts.

Fishery District	Quantity			Value		
	1976 kgs.	1975 kgs.	1974 kgs.	1976 £	1975 £	1974 £
Wexford ...	8,000	8,137	—	13,200	14,321	—
Waterford ...	2,000	2,003	—	3,300	3,525	—
Lismore ...	3,800	102	—	6,270	180	—
Cork ...	—	787	—	—	1,385	—
Limerick ...	60,000	34,996	39,200	99,000	61,593	45,803
Galway ...	27,000	17,567	18,435	44,550	30,918	21,540
Ballina ...	4,200	2,180	2,195	6,930	3,837	2,565
Sligo ...	4,400	2,541	119	7,260	4,472	138
Ballyshannon ...	17,500	6,422	3,115	28,875	11,303	3,640
Dundalk ...	12,000	344	386	19,800	605	450
Drogheda ...	11,200	3,652	3,856	18,480	6,428	4,505
TOTALS ...	150,100	78,731	67,306	247,665	138,567	78,641

Note—The catch figures set out above are based on returns which are not complete. This explains any apparent inconsistency between the figures and the official export figures in any particular year.

APPENDIX No. 15

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all engines in 1974, 1975 and 1976 by Fishery Districts.

Fishery District	Total weight for District			Total value for District		
	1976 Kgs.	1975 Kgs.	1974 Kgs.	1976 £	1975 £	1974 £
Dublin ...	5,490	6,500	7,815	14,092	6,858	7,667
Wexford ...	25,931	24,506	10,562	74,032	35,552	11,374
Waterford ...	221,163	286,925	181,701	768,482	392,563	211,959
Lismore ...	126,867	180,699	122,411	437,516	246,102	146,604
Cork ...	138,092	334,140	194,296	471,630	455,727	226,158
Kerry ...	87,336	107,676	69,522	298,279	144,738	80,009
Limerick ...	188,121	258,440	234,058	540,692	358,021	266,550
Galway ...	97,343	142,822	58,721	289,446	201,014	67,778
Connemara ...	12,702	22,742	20,001	35,334	29,136	21,648
Ballinakill ...	15,200	22,013	14,520	42,312	28,871	15,969
Bangor ...	112,526	149,842	166,306	393,348	203,081	192,833
Ballina ...	245,161	247,422	403,240	855,056	360,080	470,572
Sligo ...	21,509	20,847	23,380	65,793	29,229	27,162
Ballyshannon ...	106,156	169,544	99,096	339,041	232,781	115,330
Letterkenny ...	240,518	324,864	485,511	879,392	442,352	565,919
Dundalk ...	27,273	26,661	19,765	74,256	35,659	22,632
Drogheda ...	23,952	22,344	25,863	63,639	30,644	29,251
TOTALS ...	1,695,340	2,347,987	2,136,768	5,642,340	3,232,408	2,479,415

APPENDIX No. 16

Number, Quantity and Value of Salmon taken by Single Rod and Line in 1974, 1975 and 1976 by Fishery Districts.

Fishery District	No. of Fish			Quantity			Value		
	1976	1975	1974	1976 Kgs.	1975 Kgs.	1974 Kgs.	1976 £	1975 £	1974 £
Dublin	187	80	73	754	217	208	2,659	296	248
Wexford	351	442	318	1,305	1,628	1,307	4,605	2.225	1,556
Waterford	1,595	1,257	2,572	6,005	3,929	11,129	21,182	5,370	13,004
Lismore	691	1,210	1,092	2,094	4,775	3,631	7,386	6,527	4,242
Cork	1,117	853	1,277	3,435	2,825	4,633	12,115	3,861	5,413
Kerry	887	1,232	1,328	3,223	4,174	4,638	11,368	5,706	5,420
Limerick	1,010	2,852	2,381	3,804	9,262	7,884	13,418	12,660	9,212
Galway	410	1,139	360	1,320	4,185	1,241	4,658	5,720	1,450
Connemara	570	842	851	1,813	2,753	2,547	6,394	3,763	2,976
Ballinakill	455	409	584	1,583	1,362	2,109	5,584	1,951	2,464
Bangor	908	708	940	2,924	2,447	3,249	10,315	3,345	3,796
Ballina	1,700	1,826	1,739	5,421	5,881	5,553	19,122	8,038	6,489
Sligo	639	465	278	2,226	1,481	958	7,853	2,024	1,119
Ballyshannon	576	642	539	2,017	2,096	2,017	7,115	2,866	2,357
Letterkenny	1,306	1,213	1,335	4,573	4,456	4,390	16,131	6,092	5,130
Dundalk	66	51	165	265	214	723	996	293	845
Drogheda	52	111	476	262	481	2,310	983	658	2,699
TOTALS	12,520	15,332	16,308	43,024	52,166	58,527	151,884	71,395	68,420

APPENDIX No. 17

Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1974, 1975 and 1976 by Fishery Districts.

Fishery District	No. of Fish			Quantity			Value		
	1976	1975	1974	1976 Kgs.	1975 Kgs.	1974 Kgs.	1976 £	1975 £	1974 £
Dublin	1,560	2,401	3,200	1,083	1,209	1,541	2,030	1,199	1,359
Wexford	1,020	1,517	3,782	565	681	1,310	1,059	676	1,156
Waterford	1.479	1,031	1,532	311	683	1,014	583	677	894
Lismore	633	833	769	431	503	386	808	499	341
Cork	2,287	3,462	3,259	1,556	2,371	2,224	2,916	2,353	1,961
Kerry	3,393	6,111	5,709	2,324	4,297	3,993	4,355	4,263	3,521
Limerick	3,206	15,463	15,776	2,206	8,421	7,816	4,134	8,355	6,893
Galway	409	1,902	2,402	371	768	953	695	762	840
Connemara	9,641	8,464	10,753	3,280	4,223	5,366	6,148	4,190	4,732
Ballinakill	4,163	3,162	3,527	2,360	2,295	2,586	4,423	2,277	2,281
Bangor	2,617	7,172	8,506	1,781	2,823	4,251	3,337	2,800	3,749
Ballina	998	3,174	3,560	666	1,872	1,952	1,249	1,857	1,721
Sligo	450	604	750	306	329	382	574	326	337
Ballyshannon	603	1,261	1,362	356	629	679	666	624	599
Letterkenny	1,231	5,067	7,450	743	2,758	4,062	1,392	2,736	3,582
Dundalk	1,713	1,278	1,372	1,041	696	747	1,952	690	658
Drogheda	1,787	2,806	4,302	1,216	1,515	2,338	2,279	1,503	2,062
TOTALS	37,190	65,708	78,011	20,596	36,073	41,600	38,600	35,787	36,686

APPENDIX No. 18

PARTICULARS OF RECEIPTS AND EXPENDITURE BY BOARDS OF CONSERVATORS IN THE YEAR ENDED 30 SEPTEMBER, 1976.

Fishery District	Opening Balance	RECEIPTS					EXPENDITURE			Total Expenditure	Closing Balance
		Licence Duty	Fishery Rate	Grant from Department	Misc. Receipts	Total Receipts	Wages	Legal Costs	Travelling and Misc.		
	£	£	£	£	£	£	£	£	£	£	£
Dundalk ...	− 1,161	1,058	1,597	21,187	9	23,851	16,912	2,183	5,232	24,327	− 1,637
Drogheda ...	− 2,208	1,843	4,644	20,388	910	27,785	16,761	—	8,905	25,666	− 89
Dublin ...	− 650	2,568	632	20,253	1,249	24,702	16,289	524	8,169	24,982	− 930
Wexford ...	− 806	1,596	3,619	12,789	278	18,282	14,756	283	3,272	18,311	− 835
Waterford ...	− 7,676	4,431	4,619	52,975	4,007	66,032	47,413	87	14,423	61,923	− 3,567
Lismore ...	− 3,297	1,894	10,436	22,843	980	36,153	30,227	1,169	7,134	38,530	− 5,674
Cork ...	−11,120	3,353	1,855	47,770	4,893	57,871	33,606	15	13,911	47,532	− 781
Kerry ...	− 3,232	3,281	6,023	36,000	1,570	46,874	43,852	374	8,006	52,232	− 8,590
Limerick ...	− 8,407	7,616	11,051	50,000	3,561	72,228	58,794	1,472	13,544	73,810	− 9,989
Galway ...	+ 403	768	4,861	14,077	2,263	21,969	16,729	1,033	11,946	29,708	− 7,336
Connemara ...	− 1,317	716	6,821	6,000	470	14,007	13,663	—	2,301	15,964	− 3,274
Ballinakill ...	− 753	1,135	3,201	10,933	100	15,369	11,831	—	2,530	14,361	+ 255
Bangor ...	− 1,836	1,801	4,302	15,052	616	21,771	16,773	—	3,016	19,789	+ 146
Ballina ...	− 1,374	3,121	13,167	13,416	1,447	31,151	20,471	1,255	6,684	28,410	+ 1,367
Sligo ...	− 1,480	1,026	5,936	6,224	136	13,322	10,246	231	2,316	12,793	− 951
Ballyshannon ...	− 2,375	1,981	1,335	23,569	102	26,987	22,991	—	4,596	27,587	− 2,975
Letterkenny ...	− 6,319	5,092	3,491	26,852	—	35,435	36,812	150	6,907	43,869	−14,753
TOTALS ...	−53,608	43,280	87,590	400,328	22,591	553,789	428,126	8,776	122,892	559,794	−59,613

APPENDIX No. 19

PARTICULARS OF LICENCES ISSUED BY BOARDS OF CONSERVATORS FOR THE YEAR 1976

Fishery District	Annual (all districts)	Annual (district of issue)	Late Season (all districts)	Twenty-one day (all districts)	Seven day (all districts)	Late season (district of issue)	Foyle Area (one district)	Foyle Area (all districts)	Special Local Licence (Tidal Waters)		Draft net	Drift net	Pole net	Bag net	Stake net	Head Weir	Box or Crib	Loop net	Snap net	Gap, Eye or Basket for eels	Long line for eels	Oyster Dredge	Eel Trap
									Rod	Net													
Dundalk ...	114	64	15	—	5	58	—	3	—	—	51	—	—	—	—	—	—	—	—	12	—	—	—
Drogheda ...	237	72	35	—	21	112	—	—	—	—	58	—	—	—	—	—	6	—	—	10	20	—	22
Dublin ...	502	27	64	—	45	7	—	30	—	—	11	16	—	—	—	—	—	—	—	—	—	—	—
Wexford ...	124	139	—	—	55	129	—	—	—	—	74	—	—	—	—	—	—	—	—	—	—	—	—
Waterford ...	250	680	6	—	2	29	—	—	—	—	9	218	—	1	2	1	—	—	131	10	—	—	—
Lismore ...	165	157	8	—	187	—	—	—	—	—	7	101	—	—	2	—	1	—	2	—	—	—	4
Cork ...	382	233	34	—	148	87	—	—	—	—	45	133	—	1	—	—	—	—	—	—	—	—	—
Kerry ...	207	312	9	—	1,114	163	—	—	—	—	81	9	—	1	—	—	3	—	—	—	—	182	—
Limerick ...	534	1,311	30	—	171	108	—	—	—	—	128	78	—	—	4	—	5	—	—	69	8	—	—
Galway ...	104	37	55	—	168	9	—	—	—	—	10	38	—	—	—	—	5	—	—	16	5	90	—
Connemara ...	18	36	5	—	210	116	—	—	—	—	—	30	—	—	—	—	—	—	—	—	—	10	10
Ballinakill ...	52	61	12	—	440	44	—	—	—	—	17	36	—	—	—	—	—	—	—	—	—	—	—
Bangor ...	111	58	19	—	254	50	—	—	9	25	12	25	—	1	—	—	—	—	—	—	—	27	2
Ballina ...	154	369	58	—	660	60	—	—	—	—	10	108	—	—	—	—	7	—	—	—	5	—	—
Sligo ...	110	27	11	—	25	9	—	—	—	—	4	11	—	2	—	—	—	—	—	10	20	—	—
Ballyshannon ...	93	90	18	—	166	56	4	5	—	12	100	33	—	—	—	—	—	—	—	9	25	—	—
Letterkenny ...	342	870	170	—	520	320	131	51	40	15	60	211	—	—	—	—	10	40	—	—	10	—	—
TOTALS ...	3,499	4,543	549	—	4,191	1,357	135	89	49	52	677	1047	—	6	8	1	37	40	133	136	93	309	38

APPENDIX No. 20

Licence Duties Payable on Fishing Engines.

		£
On each	Salmon Rod—Annual (valid all districts) ...	4.00
Do.	Salmon Rod—Late Season (valid all districts) ...	3.00
Do.	Salmon Rod—Twenty-one day (valid all districts)	3.00
Do.	Salmon Rod—Seven day (valid all districts) ...	1.00
Do.	Salmon Rod—Annual (valid district of issue only)	3.00
Do.	Salmon Rod—Late Season (valid district of issue only)	2.00
Do.	Salmon Rod—Foyle area extension (valid all districts)	2.50
Do.	Salmon Rod—Foyle area extension (valid district of issue only)	1.50
On each	Draft net	4.00
Do.	Drift net	3.00
Do.	Snap net	2.50
Do.	Bag net	10.00
Do.	Stake net	30.00
Do.	Head Weir	6.00
Do.	Box or Crib	10.00
Do.	Pole net	2.00
Do.	Loop net	0.50
Do.	Gap, Eye, Basket or Coghill Net for Eels ...	2.00
Do.	Long line for Eels	2.00
Do.	Oyster fishing engine	2.00

Licence Duties Payable on Fishing Engines other than those mentioned above.

Fishery District		Fyke Net (provisional rates)	Eel Trap	Special Local Licences	
				Rod	Draft Net
		£	£	£	£
1.	Dublin	0.25	—	—	—
2.	Wexford	0.25	2.00	—	—
3.	Waterford	0.25	—	—	—
7.	Kerry	0.25	—	—	—
9[1].	Galway	2.00	2.00	—	—
10[2].	Bangor	—	—	§3.00	§25.00
13.	Ballyshannon ...	—	—	—	*40.00
14[1].	Letterkenny	—	—	—	‡20.00
				‡3.00	†12.50
17[1].	Drogheda	—	2.00	—	—
17[2].	Dundalk	—	2.00	—	—

‡ River Lackagh Tidal Waters. † River Owenea Tidal Waters.
* River Erne Tidal Waters. § Owenmore/Owenduff Tidal Waters.

APPENDIX No. 21

PARTICULARS OF PUBLIC INQUIRIES HELD DURING 1976

Date of Inquiry	Where held	Subject Matter	Decision on Report of Inquiry
20th January, 1976	Killorglin, Co. Kerry	Application by Castlemaine Harbour Co-operative Society Limited for a Mussel Fishery Order in respect of part of Castlemaine Harbour	Under consideration
8th June, 1976	Ballyvaughan, Co. Clare	Application by Irish Oyster Aquaculture Ltd. for an Oyster Fishery Order in respect of part of Muckinish/ Poulnaclogh Bays, Co. Clare	Application refused
29th, June, 1976	Dundalk, Co. Louth	Application by Irish Sea Farms Ltd. for an Oyster Fishery Order in respect of part of Dundalk Bay, Co. Louth	Application refused
27th July, 1976	Lettermore, Co. Galway	Application by Beirtreach Teoranta for an Oyster Fishery Order in respect of part of Kilkieran Bay, Co. Galway	Under consideration
27th July, 1976	Lettermore, Co. Galway	Application by Beirtreach Teoranta for an Oyster Fishery Order in respect of part of Coonawilleen/ Casheen Bays, Co. Galway	Under consideration
28th July, 1976	Carna, Co Galway	Application by Beirtreach Teoranta for an Oyster Fishery Order in respect of part of Ard Bay, Co. Galway	Under consideration
29th July, 1976	Belmullet, Co. Mayo	Application by Beirtreach Teoranta for an Oyster Fishery Order in respect of part of Elly Bay, Co. Mayo	Under consideration
30th July, 1976	Ardara, Co. Donegal	Application by Beirtreach Teoranta for an Oyster Fishery Order in respect of part of Loughros Beg Bay	Under consideration

APPENDIX No. 22

ABSTRACT OF STATUTORY INSTRUMENTS MADE IN 1976

GENERAL

(a) Drift Nets for Salmon or Trout Fishing (Maximum Depth) Bye-Law No. 582, 1976 dated 11 March, 1976, prescribes a maximum depth of thirty meshes for drift nets used in salmon or trout fishing.

(b) Tagging of Nets and Numbering of Boats for Salmon or Trout Fishing Bye-Law No. 583, 1976, dated 11 March, 1976, requires (a) that every drift, draft, loop or snap net used in salmon or trout fishing should have a tag attached showing the number of the licence authorising the use of that kind of net and (b) that every boat used in salmon or trout fishing should have marked on each bow the number of the licence authorising the use of the net being used with that boat.

(c) Drift Nets for Salmon or Trout Fishing (Maximum Depth) Bye-Law No. 584, 1976, dated 30 March, 1976, defers the coming into operation of the Drift Nets for Salmon or Trout Fishing (Maximum Depth) Bye-Law No. 582, 1976 from 1 April, 1976 to 1 January, 1977.

(d) Prohibition on Herring Fishing by Purse Seines Bye-Law No. 585, 1976, dated 29 April, 1976, prohibits the use of purse seines for the capture of herrings within the exclusive fishery limits of the State other than the area between the meridians of 5° and 9° west longitude and the parallels of 49° and 52° 30′ north latitude where the use of purse seines is already prohibited under the Purse Seine Prohibition Order 1971 (S.I. No. 262 of 1971).

(e) Undersized Sea-fish Order, 1976 (S.I. No. 109 of 1976) dated 13 May, 1976, revokes the Undersize Sea-fish Order, 1951 (S.I. No. 44 of 1951), repeats the provisions of that Order but expresses the minimum lengths for the various kinds of sea-fish named therein, with the exception of whiting, in metric instead of imperial measure, increases the minimum length for whiting to 25 centimetres and introduces a minimum length of 30 centimetres for saithe.

(f) Industrial Fishing for Mackerel (Minimum Size) Order, 1976 (S.I. No. 167 of 1976) dated 28 July, 1976, implements a recommendation of the North East Atlantic Fisheries Commission that fishing for mackerel less than 30 centimetres in length for purposes other than human consumption or bait in the North Sea and to the North and North-West of Ireland and the West of Scotland should be prohibited with the proviso that any landing of mackerel other than for human consumption or bait from the waters in question may consist of up to 20% by weight of such undersized mackerel.

(g) Sea Fisheries (Rational Exploitation of Fisheries) Order, 1976 (S.I. No. 168 of 1976) dated 28 July, 1976, permitted until 31 December, 1976, that 10% by weight of each total landing or part thereof of sea fish which is not intended for human consumption may consist of undersized sea fish; that whiting of 20 centimetres in length or over shall not be treated as undersized fish for this purpose and that until 31 December, 1977, 10% by weight of each landing of saithe or part thereof may consist of saithe which is less than the new minimum size of 30 cm.

(h) Herring Fishing (Minimum Size) Order, 1976 (S.I. No. 169 of 1976) dated 28 July, 1976, implements a recommendation of the North East Atlantic Fisheries Commission that fishing for herring of less than 20 centimetres in length in International Council for the Exploration of the Sea Statistical Area VI (a) should be prohibited subject to a tolerance of 10% by weight of such undersized herring in each landing from the waters in that area.

(i) Herring (Prohibition of Fishing) Order, 1976 (S.I. No. 170 of 1976) dated 28 July, 1976, implements a recommendation of the North East Atlantic Fisheries Commission that herring fishing in specified spawning areas should be prohibited from 15 August to 30 September in every year (both dates inclusive).

(j) Fishing Nets (Regulation of Mesh) Order, 1976, (S.I. No. 210 of 1976) dated 16 September, 1976, prescribes minimum sizes for meshes of trawl and seine nets used in sea fishing and revokes the Fishing Nets (Regulation of Mesh) Order, 1965 (S.I. No. 16 of 1965).

(k) Control of Sand or Gravel Washing Plants Bye-Law No. 589, 1976, dated 9 November, 1976 prohibits the discharge of effluent from a sand or gravel washing plant into any waters in the State without consent, provides that conditions may be attached to a consent and that such conditions may be varied one month after notice of intention to vary is given to the person concerned.

(l) Fisheries (Delegation of Ministerial Functions) Order, 1976 (S.I. No. 263 of 1976) dated 12 November, 1976 delegates to the Parliamentary Secretary to the Minister for Agriculture and Fisheries the statutory powers and duties of the Minister for Agriculture and Fisheries under the Acts specified in the Schedule to the Order.

(m) Industrial Fishing for Herring (Prohibition) Order, 1976 (S.I. No. 211 of 1976) dated 29 November, 1976, implements a recommendation by the North East Atlantic Fisheries Commission that fishing for herring for purposes other than human consumption or bait in the specified waters (which include Irish coastal waters) should be prohibited subject to a small tolerance in landings of other species.

(n) Salmon, Eel and Oyster Fishing Licences (Alteration of Licence Duties) Order, 1976 (S.I. No. 305 of 1976) dated 17 December, 1976, prescribes the rates of fishing licence duties payable from 1 January, 1977.

(o) Restrictions on the Use or Possession of Monofilament or Multistrand Monofilament Nets Bye-Law No. 590, 1976 dated 17 December, 1976, prohibits (a) the use of monofilament or multistrand monofilament nets in fishing for salmon or trout and (b) the possession of monofilament or multistrand monofilament nets of greater mesh size than one and thirteen sixteenth inches from knot to knot.

LOCAL

(a) Ballyshannon District Bye-Law No. 580, 1976 dated 27 February, 1976, prohibits fishing for salmon and trout with any fishing engine other than rod and line in the tidal waters of the River Erne and the Abbey River upstream of the defined mouth of the River Erne from 1 March, 1976 to 2 May, 1976 and extends by twenty-four hours the weekly close time in the same tidal waters.

(b) Letterkenny District Bye-Law No. 581, 1976 dated 4 March, 1976, removes the weekly 24 hour prohibition on fishing for salmon with rod and line in Lough Swilly and in the freshwater systems flowing into that Lough.

(c) River Erne (Special Local Licences) (Amendment) Order, 1976 (S.I. No. 99 of 1976) dated 30 April, 1976, provides that the special local licence duty payable in respect of a draft net for use in the tidal waters of the River Erne will be £40.

(d) Sligo District Bye-Law No. 586, dated 4 June 1976 prohibits the taking and killing in the waters of Lough Arrow of any brown trout of less than twelve inches (30.48 centimetres) in length.

(e) Oyster Fishery (Barrow Harbour) Order, 1976 dated 10 June, 1976, grants to Tralee Bay Shell Fish Co-operative Society Limited certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.

(f) Ballyshannon District Bye-Law No. 587, 1976 dated 29 June, 1976, revokes Article 5 of the Ballyshannon District Bye-Law No. 580, 1976 which extended by twenty-four hours the weekly close time in the tidal waters of the River Erne and the Abbey River upstream of the defined mouth of the River Erne.

(g) Oyster Fishery (Oyster Haven) Order, 1970 (Determination) Order, 1976 dated 7 September, 1976, determines the Oyster Fishery (Oyster Haven) Order, 1970.

(h) Irish Sea (Prohibition on Herring Fishing) Bye-Law No. 588, 1976, dated 29 September, 1976, prohibits (a) the use of fishing boats greater than 80 ft. in registered length in fishing for herring in the Irish Sea and (b) fishing for herring in the Irish Sea and landing of herring at any place on the coast within the Irish Sea during certain periods. The Bye-Law ceased to have effect on 30 November, 1976.

FOYLE AREA

Regulations made by the Foyle Fisheries Commission with the approval of the Minister for Agriculture and Fisheries and the Department of Agriculture for Northern Ireland.

(a) Foyle Area (Close Season) Regulations, 1976, dated 16 April, 1976, extend the annual close season during which the taking of salmon or trout except with rod and line is prohibited.

(b) Foyle Area (Licensing of Fishing Engines) (Amendment) Regulations, 1976, dated 16 April, 1976, increase the licence duties payable in respect of nets used in the Foyle Area.

(c) Foyle Area (Control of Fishing) Regulations, 1976 dated 22 June, 1976, replace the Foyle Area (Suspension of Fishing) Regulations 1975; provide for periods during which netting is suspended on the waters of the Foyle Area; stipulate the conditions under which netting in the Foyle Area will be terminated prior to the normal closing of the netting season; prohibit angling in the tidal water of the River Foyle during any period when netting is suspended on those waters and provide for the angling season on the Rivers Faughan, Mourne, Roe and Strule and their tributaries to be terminated on 10th October if the numbers of salmon counted going upstream is below predetermined numbers.

(d) Foyle Area (Licensing of Fishing Engines) Regulations, 1976, dated 23 November, 1976, extend the requirement for rod fishing licences to trout and rainbow trout and increase the licence fees payable for game fishing licences. The final date for the receipt of applications for licences for draft and drift nets and the procedure for the payment of the fees for such licences are also revised by the Regulations.

APPENDIX No. 23

OUTPUT AND DISPOSAL OF FISH HATCHERY PRODUCE 1975/76

Hatchery	Output (Ova)			Disposal	River system stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	(000)	(000)
Parteen	2,472	—	—	924 eyed ova 15 unfed fry 1,005 fingerlings 66 pre-smolts 109 smolts	Rivers Erne, Athlooney, Mulcair and tributaries Shannon and tributaries
Carrigadrohid	313	—	—	280 Fingerlings / Smolts	Rivers Bride, Shournagh, Bandon, Lee below Inniscarra dam.
Fanure	—	—	675	150 ova 25 Fry 292 Fingerlings 147 Spring yearlings 46 Autumn yearlings 9 2 year old 6 adults	Various Trust waters in Cos. Longford, Monaghan, Meath, Westmeath, Sligo, Offaly, Cork, Kerry, Clare and angling interests.
Mullingar	—	—	780	312 ova 21 summerlings 236 fingerlings 141 Spring yearlings 56 Autumn yearlings 14 2 year old	E.S.B. Various Trust waters in Cos. Longford, Westmeath, Cavan, Sligo, Roscommon and angling interests.
Screebe	90	114	—	60 15 50 30 5 12 15	Erriff Screebe lakes Crumlin Duhulla Inver Mor and Beag Gowla and Carna Screebe lakes

APPENDIX No. 23 (contd.)

Hatchery	Output (Ova)			Disposal	River System Stocked
	Salmon (000)	Sea Trout (000)	Brown Trout (000)	(000)	(000)
Cong	145 from Cong stock 36 from Glencullen		7.5	33 fingerlings 5 „ 40 „ 5 smolts 20	Moy System Kilcolgan Corrib Bord Iascaigh Mhara Owenmore system Lough Corrib
Glenties	40	6 10			Owenea System Owenea System Buncrana Angling Association
Salmon Research Trust, Furnace	93	—	—	87,000 fingerlings retained for rearing to smolt stage	
Burrishoole	277	—	—	100 eyed ova 147 eyed ova 30 unfed fry	Inistioge Hatchery Exported to Consul Supervieur de la Peche Erriff
Virginia	320		100	148 fingerlings 17 „ 36 „ 10 „	Boyne Liffey Boyne Knock reservoir
Carrowmore Lake Incubating Unit	36	—	—		To Cong Hatchery for rearing to fingerling stage and essential release into the Owenmore system
Inistioge	200 from Bushmills 100 from Burrishoole	—	—	100 unfed fry	Barrow, Nore and Suir

APPENDIX No. 24

SCIENTIFIC AND OTHER PAPERS

1. DEPARTMENTAL.

A. IRISH FISHERIES INVESTIGATIONS

Series A. (Freshwater)

No. 15. C. Moriarty. Studies of the eel *Anguilla anguilla* in the Munster Blackwater River.

B. FISHERY LEAFLETS

No. 76. J. Molloy. Herring fisheries on the South and South West coasts 1975/76.

No. 77. D. Minchin. A study of some invertebrate resources within Bertrabouy Bay, Connemara.

No. 78. E. Twomey. Bibliography of Irish Salmon.

No. 80. C. Moriarty. Eel Research in 1975.

No. 81. M. Crowley and C. Murphy. Heavy Metals in Mussels and Sea-Water from the Irish Coast.

No. 84. J. Molloy and T. D. Kennedy. Herring investigations on the North West coasts 1975-76.

2. OTHER PUBLICATIONS

M. Parker. Ecological Studies on L. Furnace, Co. Mayo. Bulletin E.B.S.A. 1976, p. 23.

J. Molloy. Irish Herring investigations 1975-76. Annales Biologiques 1975 (1976).

C. J. McGrath, D. P. O'Leary, P. J. Sharkey, D. M. Murphy. Experimental Electrical Guidance System for Eels at Killaloe Eel Weir on the River Shannon. I.C.E.S./E.I.F.A.C. Symposium on Eel Research and Management at Helsinki.

(8980)126241. 800. 11-78. F.P.—G3.